Buchla and Tiptop Audio — 248t

- Manual PDF

248t MARF Manual PDF

Tiptop/Buchla 248t MARF: modulation ideas for distorted percussion, basslines, and atmospheric pads

The **248t MARF** is not just a sequencer. It is a **dual arbitrary CV/event generator** with per-stage control over:

- pitch/CV
- timing
- quantization
- glide/slope
- pulse outputs
- stop/sustain/enable behavior
- stage addressing
- external CV substitution

That means the most interesting results happen when you stop thinking of it as “16-step melody” and start thinking of it as a **programmable modulation brain**.

A big strength of the 248t is that it can generate: - **pitched CV** - **timing CV** - **gates/pulses** - **reference ramps** - **stage-addressed movement** - **externally injected CV per stage**

Those are perfect ingredients for aggressive rhythmic sound design and evolving textures.

Quick mental model of what matters most

From the manual, the most creatively useful features are:

- **Two independent Function Generators (FG1 and FG2)**
  Each can read the same 16 stages differently.

- **Per-stage voltage programming**

- **Quantize / Continuous**
- **Stepped / Sloped**
- **Range: Full / Half / Limited**

- **Source: Internal / External**

- **Per-stage timing programming**

- selectable time ranges
- **time source can be Internal or External**

- each stage has its own interval time slider

- **Per-stage operating behaviors**

- **Stop**
- **Sustain**
- **Enable**

- **First / Last** loop points

- **Outputs**

- ART pitch output
- analog voltage output
- time output

- pulse 1 / pulse 2
- all-pulses output
- reference output (downward ramp over stage duration)

This gives you a module that can act like: - a sequencer - a clock divider / irregular rhythm source - a CV animator - a gated modulation matrix - a patch-programmable phrase generator

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First: the best modulation mindset for the 248t

To get unique sounds, use the MARF in these three ways:

1. Use one FG for notes, the other FG for motion

For example: - **FG1** = pitch sequence to oscillator - **FG2** = filter cutoff, wavefolder amount, distortion tone, VCA decay, FM amount, sample rate, etc.

This is the easiest route to aggressive bass and evolving pads.

2. Use external CV inputs A/B/C/D as “modulation layers”

The manual says a stage can use **external CV instead of internal voltage/ time settings**. That is huge.

This means stage-by-stage you can decide: - use the slider value - or swap in some external modulation source

So one sequence can selectively “invite in”: - LFO bursts - random voltage - envelope output - another sequencer - audio-rate oscillator for chaos

That’s where the MARF gets weird.

3. Program timing as much as pitch

A lot of people use sequencers only for pitch. On the MARF, **time itself is compositional**.

Use per-stage interval time plus: - stop - sustain - enable - external time source - global time multiplier

That creates: - staggered grooves - syncopated broken basslines - choking percussion - unstable evolving drones - pseudo-granular rhythmic phrasing

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Best 248t features for your requested sound categories

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1. Distorted percussive sounds

For percussion, the MARF excels at making **non-uniform trigger and modulation structures**.

Core idea

Use the 248t to separately control: - when a hit happens - how long the hit lasts - what its pitch/timbre is - whether that hit is normal, accented, gliding, or externally modulated

Great patch architecture

- **FG1 voltage out** → oscillator pitch / drum voice pitch / filter ping frequency
- **Pulse 1** → envelope trigger for VCA or LPG
- **Pulse 2** → accent path, distortion enable, wavefolder CV, second envelope, or noise burst VCA

- **Reference output** → directly to LPG CV for natural decay-ish per-hit contour
- **FG2 voltage out or time out** → modulate distortion tone / filter cutoff / FM amount

Why this works

The manual notes: - each stage can have **two independent pulse outputs** - the **reference output** gives a **downward ramp over the interval time** - **time output** gives CV from the interval slider

So every step can carry both **rhythmic** and **shape** information.

Distorted kick / tom patch

Patch: - sine or triangle VCO → VCA / LPG → distortion → mixer - FG1 voltage out → oscillator pitch - Pulse 1 → short envelope to VCA/LPG - Pulse 2 → second envelope controlling distortion drive or wavefolder - Reference output → exponential-ish decay destination, like filter cutoff or LPG CV - Use **sloped** stages on certain hits

Programming suggestions: - set most stages to **stepped** - choose a few stages with **sloped** pitch for kick “doooom” downward pitch sweep character - use **limited range** or **half range** for easier tuning of drum pitches - assign **Pulse 2** only on accents - vary **interval time** per stage so hits rush and drag slightly

What makes it nasty: - patch **FG2 voltage out** to FM amount on the oscillator or to distortion CV - make FG2 a shorter loop than FG1 using **First/Last** - this creates repeating accent polymeters over the drum cycle

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Broken industrial snare / metallic hit

Patch: - noise + oscillator mixed - into bandpass or highpass filter - into VCA - into wavefolder or distortion

Use: - Pulse 1 → trigger main snare envelope - Pulse 2 → open a second VCA for noise burst or ring mod layer - FG1 voltage → filter cutoff or oscillator pitch - FG2 voltage → wavefolder / sample rate reducer / resonance / FM depth

Programming tricks: - set some stages to **external source** for voltage and feed in random CV from S&H/noise - use **quantize off** for non-musical metallic filter frequencies - use **enable** on selected stages so the phrase waits for external gate conditions before continuing - use **stop** stages to create sudden stutters and chokes

Very effective move: - send **All Pulses Out** to clock another sequencer or logic module that modulates distortion parameters - now every stage advance becomes an opportunity for secondary chaos

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Clicks, glitches, and fractured percussion

The MARF can get very strange if you use **very short time ranges** and stage addressing.

Patch idea: - set some stages to very fast timing - use **continuous/cont stage address** mode on one FG and strobe different positions - clock the other FG conventionally

Patch: - FG1 pulse output → trigger ultra-short envelope - FG1 voltage output → VCA CV or LPG CV instead of pitch - oscillator/noise/audio source remains static - stage values become amplitude or timbre windows

Result: - rhythmic amplitude carving - almost wavetable-like percussive gestures - jittery granular drum phrases

For more destruction: - use **external voltage source** on selected stages and patch in audio-rate oscillator - since the stage chooses external source by programming, only certain hits go berserk

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Percussion-specific modulation ideas

Here are especially good destinations for the MARF:

- distortion amount
- wavefolder symmetry/fold depth
- drum voice decay
- LPG decay
- filter resonance
- bandpass frequency
- FM amount
- noise VCA amount
- bitcrusher rate/depth
- sample rate reduction
- transient shaper/accent CV
- send amount to spring reverb or delay

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2. Crazy basslines for dubstep / drum and bass

This is where the MARF is especially strong.

The main recipe for modern aggressive bass: - stable phrase structure - unstable timbre movement - slides/glides - per-hit accents - rhythmic asymmetry - selective quantization - modulation relationships that don’t loop evenly

The 248t can do all of that.

Core bassline strategy

Use: - **FG1** = pitch - **FG2** = timbre movement

Patch: - FG1 voltage or ART out → main bass oscillator pitch - Pulse 1 → envelope or LPG trigger - Pulse 2 → accent envelope / distortion hit / FM

burst / sub mute / re-trigger - FG2 voltage → filter cutoff, wavetable position, FM index, fold amount, phase mod amount, resonance, or VCA level - Reference output → ducking contour, LPG pluck, or sidechain-like movement - Time output → another timbral parameter for note-length-correlated motion

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Use sloped stages for bass slides

From the manual: - **Sloped/Stepped** is per stage - slew time is based on that stage's interval time

That is gold for bass music.

Best use:

Program most bass notes as **stepped**, but set selected transition notes to **sloped**.

That gives: - classic glide into target note - grotesque pitch swoops - "talking" bass phrase connections - liquid DnB lead-in notes

Extra trick:

Because slope time depends on **interval time**, longer stages produce longer slides.
So you can compose the groove and the slide shape together.

This is a uniquely MARF behavior and it feels much more organic than global portamento.

Wobble without sounding generic

Instead of a normal synced LFO wobble:

- use **FG2** as the wobble source
- assign different interval times to stages
- mark different loop boundaries than FG1

- occasionally substitute external CV using A/B/C/D on certain stages

Patch: - FG2 voltage → multimode filter cutoff - FG2 Pulse 1 → re-trigger a modulation envelope every few stages - FG2 time output → distortion tone or wavefolder bias

Now the “wobble” is not repetitive LFO motion. It becomes a **composed modulation phrase**.

This works especially well for: - reese basses - vowel basses - FM growls - folded sub-mid basses

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Bass patch 1: Reese monster

Patch: - 2 detuned saws or PWM squares - into filter - into soft clipper / wavefolder / distortion

Use: - FG1 quantized voltage → oscillator pitch - FG2 unquantized voltage → filter cutoff - Pulse 1 → VCA envelope - Pulse 2 → distortion accent CV or FM burst envelope - Reference out → filter decay contour

Programming: - FG1 in **half range** for musical bass note programming - enable **quantize** on musical stages - disable quantize on occasional transitional stages if you want ugly in-between slides - use **sloped** notes selectively - set FG2 loop shorter or longer than FG1 using First/Last markers

Result: - bass notes stay anchored - timbre cycles phase against pitch phrase - pattern feels alive, not 8-step preset-ish

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Bass patch 2: Dubstep formant/growl line

Patch: - complex oscillator / wavetable / FM voice - bandpass or lowpass filter - wavefolder/distortion after filter - optional second filter for vowel movement

Use MARF like this: - FG1 voltage → oscillator pitch - FG2 voltage → wavetable position or FM index - Time output from FG2 → filter cutoff - Pulse 2 → trigger short envelope to second modulation destination, like formant sweep - external input A → random stepped voltage - set selected FG2 stages to **external source**, so only some timbre stages use randomness

Why this is powerful: You get a phrase that is mostly controlled and repeatable, but certain bass hits “mutate” because stage-programmed external source injects new CV.

That’s excellent for: - neuro bass - metallic wobble - formant screaming bass - machine-like resampled phrases

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Bass patch 3: Stop/start savage groove

The manual’s **stop**, **sustain**, and **enable** functions are killer for bass.

Stop

A stop stage waits until a start pulse arrives.

Sustain

If a gate is high at start input, the stage holds.

Enable

Stage pauses until voltage above 5V arrives at start input.

These are amazing for broken rhythmic basslines.

Patch: - FG1 runs pitch line - gate pattern from another sequencer, manual controller, logic module, or trigger pattern → FG1 start input - certain stages programmed as **stop** or **enable** - Pulse 1 still triggers voice - FG2 continues separately or is also externally controlled

What happens: - the phrase hangs on a stage - then bursts forward when external rhythm allows it - gives gated, syncopated, “breathe and lunge” bass motion

Perfect for: - halftime dubstep - techstep DnB - broken neuro phrases - pseudo-sidechained stop-go riffs

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Best bass modulation destinations from the 248t

Try patching the MARF into:

- oscillator pitch
- oscillator FM index
- oscillator wavefold amount
- wavetable position
- filter cutoff
- filter resonance
- comb filter frequency
- distortion drive
- distortion tone
- VCA level
- sub oscillator level
- noise layer level
- phase modulation depth
- LPG control
- delay send amount
- chorus depth
- stereo spread CV
- feedback amount on delay/filter

Stage-address tricks for bass

The **Stage Address** section is especially good for advanced bass work.

From the manual: - continuous mode sweeps through stages with the address control and stops internal clock - strobe loads stage corresponding to current address value - stage can be controlled by knob or external voltage

This means the 248t can become a kind of **voltage-scanned wavesequence/modulation table**.

Try this:

- program 16 stages as different timbre values, not notes
- set FG2 to **continuous**
- patch an LFO, envelope, random CV, or audio-rate CV into external stage address
- use FG2 voltage out as filter/folder/FM modulation

Now you are “scanning” a programmed modulation shape instead of just clocking steps.
That can sound like: - talking bass - tearing filter vowels - scanning distortion colors - unstable digital motion

For extreme bass: - use envelope into stage address for attack-to-decay timbre travel - use audio-rate oscillator into stage address for tearing discontinuous modulation

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3. Haunting atmospheric pad sounds

The MARF is also great for pads because it can create **slow, non-uniform, semi-repeatable evolution**.

Pads get interesting when multiple parameters drift at different speeds with occasional structural surprises.

The MARF is built for that.

Core pad strategy

Use very slow time ranges and separate the generators:

- **FG1** = pitch/harmonic center
- **FG2** = timbral evolution

Patch: - FG1 quantized voltage → oscillator pitch or chord root CV - FG2 continuous voltage → filter cutoff / wavetable position / morph / FM index - Reference output → slow contour to LPG, filter, or reverb send - Time output → modulation depth, stereo width, shimmer amount, or delay feedback - Pulse outputs → occasional envelope resets, freeze functions, or reverb bloom triggers

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Use long stage times and sloped movement

The manual says time can range from very short to **up to 2 minutes**.

For pads: - use long intervals - set many stages to **sloped** - use **continuous voltage** rather than quantized where timbre is concerned - use **quantized** for pitch if you want harmonic clarity

This gives: - slow glacial morphing - note drift - harmonic ambiguity - ghostly transitions between states

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Pad patch 1: haunted chord bed

Patch: - 2 or 3 VCOs or a polyphonic voice - through LPG or lowpass filter - into long reverb and modulated delay

Use: - FG1 voltage → pitch CV or root note transposition - FG2 voltage → filter cutoff - FG2 time output → reverb send or delay feedback - Reference output → subtle VCA/LPG contour - Pulse 1 → trigger sparse envelope or shimmer burst every few stages

Programming: - choose a key/scale if using quantize - mark only a few stages with pulse outputs - use unequal stage times so the phrase feels unmetered - use **First/Last** loop points shorter on one FG than the other

Result: - a pad that never quite comes back the same way - harmonic movement and timbral movement drift against each other

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Pad patch 2: external-source spectral ghosting

This is one of the most powerful MARF tricks.

Use stage-programmed external voltage source for timbre.

Patch: - external input A = slow random CV - external input B = envelope follower from another sound - external input C = sine LFO - external input D = very slow manual CV/joystick/pressure source

Set selected stages to **external voltage source**.
Now some stages use the programmed slider value, while others “open portals” to external modulators.

Patch FG2 voltage to: - wavetable position - wavefolder symmetry - filter FM amount - reverb tone - granular density - spectral morph

This creates a pad that has programmed structure but periodically becomes reactive and alive.

Excellent for: - dark ambient - haunted drone - sci-fi beds - decaying tape-memory textures

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Pad patch 3: frozen-time sustain architecture

Use **sustain** and **enable** to make pads breathe.

Patch: - slow gate or manual controller to start input - selected stages programmed as **sustain** - some stages as **enable** - long interval times - sloped voltages

What happens: - the pad arrives at a stage and lingers unnaturally - then advances only when external condition changes - creates suspended harmonic moments

Very useful for: - performance-controlled drones - evolving soundtrack textures - ritual ambient structures - live improvisation with pressure/foot controller/keyboard gate

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Advanced cross-modulation techniques

These are where the MARF becomes truly unique.

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1. Use FG1 to make sound, FG2 to modulate FG1 timing indirectly

Patch: - FG2 output → external input selected as **time source** on FG1 stages - some stages of FG1 use internal time, some external time

Now pitch phrase timing changes according to another programmed function.
This creates: - rushing/dragging basslines - unstable percussion grids - swelling pad evolution

If external time CV is absent, the manual says it defaults to the fastest value of the selected range, so be deliberate.

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2. Use Time Output as a hidden second sequencer

The manual states the time slider also produces CV at the **time output**.

This means each FG really gives you: - pitch-like CV - time-derived CV - pulses - reference ramp

The time sliders can therefore be programmed as a totally different contour than pitch.

Great uses: - percussion decay sequence - distortion amount sequence - FM depth sequence - reverb send sequence - bass brightness sequence - pad stereo width sequence

This is one of the most underused powers of the MARF.

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3. Use All Pulses Out as a master chaos clock

Because **All Pulses Out** fires whenever a new stage is addressed, you can use it to drive: - clocked random - Bernoulli gates - logic - clock dividers - envelope followers - switched modulation

Then route those results back into: - A/B/C/D external inputs - start inputs - stage addressing - effect CVs

That creates a self-related ecosystem around the MARF.

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4. Use mismatched cycle boundaries

Program: - FG1 first/last = stages 1–8 - FG2 first/last = stages 3–13

Now both generators traverse the same stored 16-stage programming space but with different cycle windows.
This gives extremely musical long-form variation without randomness.

Especially good for: - bassline phrase evolution - drifting accents in percussion - pads that take a long time to truly repeat

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5. Mixed quantized/unquantized stage programming

A very signature MARF trick: - quantize some stages - leave others continuous

Use this for bass: - stable musical root notes on some stages - ugly in-between bent notes on transitions

Use this for pads: - clear harmonic anchor points - drifting microtonal movement between them

Use this for percussion: - discrete tuned drum hits alternating with inharmonic metallic offsets

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Patch recipes by genre target

A. Distorted percussion patch recipe

Goal: industrial broken drum machine

Patch: - VCO sine → wavefolder/distortion → LPG/VCA → mixer - noise → VCA → mixer - FG1 voltage → VCO pitch - Pulse 1 → LPG/VCA envelope - Pulse 2 → noise VCA envelope - Reference out → LPG CV - FG2 voltage → distortion drive - FG2 time out → filter cutoff or fold symmetry

Programming: - short to medium time ranges - stage time variation for groove - some sloped pitch stages for tom/kick dives - pulse 2 only on selected accents - external source on a few FG2 stages using random CV

Result: - heavy kicks/toms/snare hybrids - asymmetrical aggression - animated distortion color

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B. Dubstep bass patch recipe

Goal: snarling syncopated growl bass

Patch: - main oscillator + sub oscillator - into multimode filter - into wavefolder/distortion - into VCA

MARF: - FG1 ART/voltage → pitch - FG2 voltage → filter cutoff - FG2 time out → FM index - Pulse 1 → VCA envelope - Pulse 2 → distortion accent envelope - Reference out → subtle ducking or second filter contour - All Pulses Out → clock random source - random source back to external input A - selected FG2 stages set to external source

Programming: - quantized bass notes in half range - selective sloped transitions - one or two stop/enable stages for dramatic hangs - shorter loop on FG2 than FG1

Result: - composed but mutating growl phrases - classic bassline cohesion with non-repeating detail

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C. DnB reese patch recipe

Goal: rolling, tense, evolving low-end

Patch: - two detuned saws - lowpass filter - saturation - chorus/flanger optional

MARF: - FG1 quantized voltage → pitch - FG2 voltage → filter cutoff or chorus depth - Time output → distortion tone - Pulse 1 → short VCA envelope - Pulse 2 → accent envelope to resonance/FM

Programming: - mostly short stage times - a few longer holds - occasional sloped notes into phrase endpoints - stop stage before drop resolution - external start pulses from trigger sequencer for syncopation

Result: - rolling bass with phrase punctuation - long-form modulation that doesn’t sound loop-locked

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D. Haunted pad patch recipe

Goal: dark cinematic evolving texture

Patch: - rich oscillator / wavetable source - LPG or gentle filter - large reverb - modulated delay

MARF: - FG1 quantized voltage → root/transposition - FG2 continuous voltage → wavetable position - Reference output → LPG/filter contour - Time output → reverb send - Pulse 1 → shimmer burst / freeze / envelope reset - external inputs fed by slow random, envelope follower, sine LFO, manual CV - selected stages on FG2 use external source

Programming: - long stage intervals - sloped on most timbral stages - sparse pulse programming - different first/last loops for the two FGs - sustain stages controlled by external gate

Result: - eerily structured but fluid pad motion - occasional spectral intrusions from external sources - strong “haunted machine” quality

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Best specific modulation destinations by sound goal

For distorted percussion

Use MARF outputs to modulate: - decay time - pitch - fold depth - distortion drive - resonance - noise amount - transient level - LPG CV - sample rate - bit depth - send to spring/delay

For dubstep/DnB bass

Use MARF outputs to modulate: - filter cutoff - filter mode scan - FM index - wavefolder - wavetable position - phase modulation depth - distortion drive and tone - sub level - stereo width - comb filter frequency - formant/vowel filter

For atmospheric pads

Use MARF outputs to modulate: - cutoff - reverb send - delay feedback - wavetable position - oscillator blend - FM amount - stereo image - shimmer amount - LPG level - saturation tone - granular density/position if using sampler modules

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Performance tips

1. Use presets as macro-scene changes

The manual says you can save and recall **12 presets**.
This is extremely useful live.

Create: - preset 1 = restrained groove - preset 2 = distorted variation - preset 3 = breakdown - preset 4 = drop - preset 5 = ambient wash

Since stage data includes slider positions and settings, presets can function like song sections.

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2. Use manual stage advance for fills

The **advance** control on either FG is perfect for manual performance nudges: - drum fill skip - bass phrase mutation - forcing unexpected pad harmonies

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3. Use continuous stage addressing as a timbre macro

When stage address is in **continuous** mode, scanning stages can feel like moving through a custom wavetable of modulation states.

Great live gesture: - patch a joystick or pressure controller to stage address external CV - use FG2 voltage out for filter/folder/FM - “play” timbre like an instrument

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4. Keep one FG stable and abuse the other

For musical results: - let one FG define the recognizable musical identity - make the other FG do the dangerous stuff

Examples: - stable bass notes, unstable filter motion - stable percussion triggers, unstable distortion color - stable pad root, unstable spectral movement

That prevents total chaos while still sounding unique.

Practical “secret sauce” ideas

Selective external source substitution

This is probably the most powerful sound-design trick in the manual.

Feed A/B/C/D with: - random - envelope follower - audio oscillator - slow LFO

Then on only a few stages, switch source to external.

That gives: - occasional monstrous bass hits - one snare in a bar that mutates - pads that briefly become haunted - controlled unpredictability

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Use time sliders as expression, not just duration

Because time output can be used separately, program stage times musically: - short notes = brighter - long notes = darker - long notes = more reverb - short hits = more distortion

This creates strong internal phrase coherence.

Use limited range for bass and percussion

The manual notes: - **Full range** = 0–10V - **Half range** = 0–5V - **Limited** = 2V spans with offsets

For bass, half/limited often feel better because: - easier to dial pitch precisely - less accidental huge jumps - more “playable” musical range

For percussion: - limited range is excellent for tuned drum zones

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Exploit unequal timing

The MARF’s stage times can make everything feel alive.

For bass: - alternate short-short-long-short patterns - then break them with stop/enable

For percussion: - micro-variation in stage lengths humanizes and destabilizes grooves

For pads: - unequal long durations make the harmony feel organic and non-gridlocked

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Best minimal starter patches

If you want immediate results, start here.

Starter 1: nasty bass

- FG1 → pitch
- FG2 → filter cutoff
- Pulse 1 → amp envelope
- Pulse 2 → distortion accent
- use sloped notes sparingly
- shorter loop on FG2 than FG1

Starter 2: broken drums

- FG1 → drum pitch
- Pulse 1 → main hit
- Pulse 2 → accent/noise burst
- Reference out → LPG decay
- FG2 → distortion tone
- program irregular stage times

Starter 3: haunted pad

- FG1 → root pitch
- FG2 → wavetable/filter
- Time out → reverb send
- Reference out → slow LPG/filter shape
- long sloped stages
- external source on a few timbre stages

Final advice

The 248t becomes special when you combine these four concepts:

1. **Pitch and timbre are sequenced separately**
2. **Timing is part of composition**
3. **Only some stages become externalized/randomized**
4. **Loop lengths and behaviors differ between the two FGs**

That combination is exactly how you get: - **distorted percussive brutality** - **dubstep/DnB basslines with movement and attitude** - **haunting evolving pads that feel alive instead of looped**

If you want, I can also give you: - **3 concrete patch diagrams** for these sound categories - a **“best modules to pair with the 248t” list** - or a **stage-by-stage example program** for bass, percussion, and pads.

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