Bastl Instruments — Dark Matter

- Manual PDF

Manual PDF: manual-dark-matter.pdf

Casper/Bastl Dark Matter — using it for melodic components

Based on the attached manual, this PDF is for **Casper Electronics / Bastl Instruments – Dark Matter: Feedback Observatory**.
Dark Matter is not a conventional oscillator or filter voice by itself. It is a **feedback instrument / processor** built around:

- **Input/Drive**
- **Dynamics** envelope follower
- **Tone** section with **Bass** and **Treble** EQ/boost
- **Feedback (FBK)** loop with internal and external routing
- **X-Fade** crossfader between input and feedback
- CV control over drive, tone boosts, x-fade, and feedback amount

Its core strength for melody is that it can turn simple material—drums, tones, VCOs, external effects—into **pitched resonances, sub-octaves, screaming harmonics, unstable drones, and animated tuned feedback**.

What the module does musically

Dark Matter creates melodic content in three main ways:

1. **It extracts pitch from feedback**
2. The manual explicitly mentions using the feedback loop to reach **resonant oscillation** and to tune the “pitch” of the loop.

3. The **FBK** control and **FBK fader** determine how close the system is to self-resonance.
4. **It reshapes incoming audio into pitched material**
5. The **Drive** section adds gain/soft clipping and optional **Hyper Drive**.
6. The **Tone** section boosts bass/treble into the feedback path, which emphasizes different frequency regions and can make a loop behave more like a tuned instrument.
7. **It animates melody/rhythm with control signals**
8. The **Dynamics** section is an envelope follower from the input signal.
9. That envelope is internally normalled to the **X-FADE CV**, so transients and dynamics can “play” the feedback balance.
10. CV inputs for **Drive**, **Bass Boost**, **Treble Boost**, **X-Fade**, and **FBK** let sequencers/LFOs shape pitch-like behavior over time.

Key sections relevant to melody

1. Drive

The manual describes **Drive** as a VCA/preamp with soft clipping. This is important melodically because:

- more drive excites the feedback network harder
- it increases harmonics, helping a tone cut through
- with **Hyper Drive** on, the signal can push into hotter saturation and more aggressive pitched feedback

Melodic use

- Use lower Drive for more stable, sine-ish/rounded resonances
- Use higher Drive for harmonically rich, lead-like shrieks

- Modulate **Drive CV** with a sequence or envelope for accent patterns

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2. Dynamics

This is an **envelope follower** tracking the input signal and generating a CV.

The manual notes: - output is approximately **0–5 V** - it is internally normalled to **X-FADE CV** - it has **pre/post drive** source selection - **Decay** sets envelope speed from snappy to sluggish

Melodic use

This is one of the most powerful musical features in the module.

You can use Dynamics to: - make drum hits excite tuned feedback like a playable percussion synth - make melodic inputs “duck/push” the feedback amount - derive phrasing from a source and apply it to the feedback voice

If you patch a rhythmic or melodic signal into Dark Matter, Dynamics can convert articulation into a control shape, so feedback opens in time with the source.

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3. Tone

The manual describes Tone as a **2-band EQ** feeding the feedback section.

Controls: - **Bass fader / Bass boost / Bass boost CV** - **Treble fader / Treble boost / Treble boost CV**

Melodic use

Tone is effectively part of the “tuning” and “voicing” of the feedback instrument.

- **Bass emphasis** encourages lower resonances and sub-octave behavior

- **Treble emphasis** encourages harmonics, edge, and upper partials
- the balance between Bass and Treble can make the feedback read as:
- bassline
- lead
- metallic overtone texture
- unstable drone

For melody, think of Tone as both: - a timbre shaper - a coarse pitch-behavior shaper

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4. FBK

This is the heart of the module.

The manual states that the FBK section: - controls the intensity of the feedback loop - can be pushed into **resonant oscillation** - has **FBK fader**, **FBK CV**, and an **ENV** indicator - includes **FBK OUT** and **FBK IN** for external insertion - has **CV control routing** between input and output side of the external loop - has **Out Polarity** invert switch for external loops

Melodic use

This is the section that makes Dark Matter capable of producing pitched material even from simple sources.

- Turn up **FBK** until the system starts “locking” onto a pitch region
- Adjust **Bass/Treble** and **X-Fade** to find a stable note-like resonance
- Feed external processors into **FBK OUT → effect/module → FBK IN** to create more controllable tuned loops

The manual specifically mentions: - creating **sub octave tones and harmonic fills** - using an external VCO in relation to the feedback path - using the feedback loop almost like an instrument to be tuned

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5. X-Fade

This crossfades between the **dry/input path** and the **feedback path**.

The manual notes: - the **Dynamics** output is internally patched to **X-FADE CV** - there is an **Input/Feedback switch** - it can crossfade audio and interact deeply with the envelope follower

Melodic use

X-Fade lets you decide whether the listener hears: - the original played note/drum/source - the resonant feedback result - a hybrid of both

This is crucial for melody because it lets you create: - **attack from the source, sustain from the feedback** - ghost harmonies behind a sequence - pseudo-duophonic textures, where dry signal carries pitch center and feedback adds tuned overtones

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Best melodic applications from the manual

The manual includes quick-starts and patches for:

- **Drums**
- **Tones**
- **External feedback**
- **Loops**

These strongly suggest the most useful melodic workflows.

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1. Melodic percussion from drums

The manual's **Drums** quick start says to:

- feed **Drive** with the drum signal
- set **X-Fade** to medium and raise **FBK**
- adjust **Bass** and **Treble** to shape feedback distortion and tone
- use **Dynamics CV** → **FBK CV** type interaction to apply the drum envelope to feedback
- optionally enable **Hyper Drive**
- bonus: use gates/LFOs synced to the drum sequencer on CV inputs

What this gives you

A drum hit becomes an exciter for a tuned resonant body. That means:

- kick → subby pitched boom
- snare/rim → tuned bark
- hi-hat/noise burst → metallic note cloud

How to turn it melodic

Use a sequenced or tuned source elsewhere in the system alongside the drum excitation:

Patch concept

- Patch a kick, tom, or click into **Input**
- Raise **FBK** until the loop begins to sing
- Shape the resonant region with **Bass/Treble**
- Sequence **FBK CV** or **X-Fade CV** for note-like stepping
- Mult the same clock/gate pattern to modulation sources for repeatable phrasing

This creates percussive melodies, tuned tom lines, and rhythmic ostinatos.

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2. Tones → sub-octaves and harmonics

The manual's **Tones** quick start says to:

- connect an audio waveform to **Input**
- keep **Drive** low and **Hyper Drive** off
- adjust **Bass** and **Treble** to shape waveform
- adjust **Drive, Tone, and FBK** to bring in **sub octave tones and harmonic fills**
- connect **LFOs to CV inputs** to animate wave shape and tone

Bonus suggestions: - patch external waveform into **FBK CV** - keep **FBK CV** around middle - with a bit of fine tuning, sync the feedback to an **external VCO** - use **FBK OUT** as a special audio out

Why this matters

This is the clearest melodic application in the manual. Dark Matter can act like a **harmonic companion** to a pitched oscillator.

Musical result

If you feed it a plain VCO waveform: - it can add subharmonics under the note - generate unstable upper harmonics - create a pseudo second voice around the original pitch - produce animated distortion that tracks or quasi-tracks the source

Best use together with other modules

Dark Matter pairs especially well with: - a basic analog VCO - a sequencer sending 1V/oct to that VCO - a VCA/envelope before or after it - delay/reverb after Dark Matter

In that role, the VCO supplies exact pitch, while Dark Matter supplies **musical complexity**.

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3. External feedback loop as a melodic resonator

The **External Feedback** section of the manual is especially important.

It explains: - use **FBK OUT** and **FBK IN** to insert modules/effects into the loop - external modules may invert polarity; use **Out Polarity** - **CV Control** chooses whether the FBK VCA responds before or after the external processor - examples shown include **echo, reverb, filter, phaser, distortion**

Why this is huge for melody

Once you place modules in the loop, Dark Matter becomes a resonant ecosystem. You can bias the loop toward stable pitches or harmonically useful resonances.

Good external modules for melody

- **Filters**: narrow resonance and emphasize pitch centers
- **Delays**: Karplus-ish pitched plucks, repeats that lock into note-like resonances
- **Phasers**: moving comb-like tones
- **Distortion/waveshapers**: harmonic lead textures
- **BBD/echo**: ghost melodies and self-playing lines

A particularly useful setup

- **FBK OUT → filter → delay → FBK IN**
- Input a short pluck/click/noise burst
- Raise FBK until the loop becomes semi-self-sustaining
- Tune the filter cutoff and resonance for pitch center
- Use X-Fade to blend attack from input with sustained pitched loop

That produces very musical plucked or droning melodic material.

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4. Loops and drone melody

The manual's **Loops** page shows several routing examples involving: - LFO - audio - VCO - drums - echo

This implies Dark Matter excels as a **hub** where modulation, external sound, and feedback all cross-influence.

Melodic use

For drones and long-form melody: - feed a VCO or loop into Input - use an LFO on **X-Fade CV** or **FBK CV** - optionally put echo in the FBK loop - tune Bass/Treble/FBK for a pitch cluster - then slowly modulate around that "note"

This yields: - evolving drone melodies - overtone shifts - unstable chord-like beating - semi-autonomous melodic phrases

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How to use Dark Matter with other eurorack modules for melody

Since you asked how these modules can be used together, here's the practical answer in eurorack terms:
Dark Matter works best as a **melodic enhancer / resonant voice shaper** alongside more conventional melodic modules.

A. With a VCO + sequencer

Goal

Turn a plain mono sequence into a richer melodic voice.

Patch

- Sequencer 1V/oct → VCO
- VCO audio → Dark Matter **Input**
- Set **Drive** low to medium
- Set **X-Fade** around center
- Slowly raise **FBK**
- Use **Bass** for body, **Treble** for overtone detail
- Add slow modulation to **FBK CV** or **X-Fade CV**

Result

- fundamental pitch stays readable
- Dark Matter adds subharmonics, extra harmonics, and resonant sustain
- sequence feels more alive and less static

Best for: - acid-like lines - industrial leads - unstable basslines - psychedelic monosynth phrases

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B. With a drum voice + sequencer

Goal

Create tuned percussion and melodic hits.

Patch

- Triggered drum/click/noise source → **Input**
- Dynamics source set to track that input
- Dynamics internally affects X-Fade, or patch Dynamics output elsewhere
- Raise **FBK** until each hit excites a pitched burst
- Sequence **FBK CV** or **Bass Boost CV**
- Optionally send a synced LFO to **Treble Boost CV**

Result

- percussive notes instead of plain drum hits
- tom-like lines
- electro/IDM metallic melodies
- feedback “singing” per trigger

C. With an external filter in the loop

Goal

Make the feedback act more like a tuned voice.

Patch

- **FBK OUT → filter input**
- Filter output → **FBK IN**
- Audio source → Dark Matter Input

- Adjust filter cutoff/resonance while increasing FBK
- Use **Out Polarity** if the loop cancels or dies
- Switch **CV Control** to find the more stable/musical feedback behavior

Result

- stronger pitch center
- easier to find singable notes
- more controllable melodic resonance

This is one of the best ways to use Dark Matter musically.

D. With delay/reverb in the loop

Goal

Create ghost melodies and ambient tonal feedback.

Patch

- **FBK OUT → delay or reverb → FBK IN**
- Feed short notes, plucks, or vocal-like tones into Input
- Use X-Fade to bring in feedback tail
- Modulate FBK slowly

Result

- shimmering note trails
- decaying harmonized repeats
- self-generating ambient melody fragments

E. With LFOs and envelopes

Goal

Animate static notes into musical phrases.

Patch ideas

- Envelope → **Drive CV** for accents
- LFO → **Bass Boost CV** for vowel-like low movement
- Another LFO → **Treble Boost CV** for shimmer
- Clocked stepped voltage → **FBK CV** for phrase changes
- Slow triangle → **X-Fade CV** for dry/wet melodic breathing

Result

Dark Matter becomes less an effect and more a **performance voice**.

Techniques for actual melodic writing

1. Treat the source as pitch, Dark Matter as articulation

Use a properly tuned oscillator or synth voice as the note source.
Let Dark Matter provide: - overtone cloud - grit - pseudo-resonance - feedback sustain

This is the easiest way to keep melody intelligible.

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2. Use feedback as a second voice

Blend dry and feedback with **X-Fade** so the original note is still there.
Now the feedback behaves like: - a shadow melody - octave/sub layer - unstable harmony

This works very well for bass and lead lines.

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3. Excite it with short transients

Short clicks, pings, hats, rims, or noise bursts often produce the most playable resonances.
That gives you: - plucks - tuned hits - pseudo-Karplus behavior - acoustic-like attacks

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4. Sequence the CV, not just the note

Dark Matter is highly responsive to modulation.
Instead of only sequencing pitch elsewhere, also sequence: - **FBK CV** - **X-Fade CV** - **Bass/Treble boost CV** - **Drive CV**

This creates melodic variation even if the note itself is static.

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5. Use external loop modules to “tune” the behavior

The external feedback loop is where Dark Matter gets much more compositionally useful.

A filter, EQ, phaser, delay, or resonator in the loop can turn chaotic feedback into: - a stable bass growl - tuned comb tones - repeating melodic figures - spectral drones

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Practical patch recipes

Patch 1: Harmonic lead enhancer

Use when: you already have a lead sequence

- VCO saw → Dark Matter Input
- Keep Drive moderate
- Hyper Drive off initially
- X-Fade at 40–60%
- FBK just below self-oscillation
- Treble slightly boosted
- Slow LFO to FBK CV

Result: animated lead with harmonic bloom and occasional resonant flare

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Patch 2: Sub bass companion

Use when: you want a bassline to feel larger

- Square or sine-ish VCO → Input
- Bass boosted, Treble reduced
- FBK raised until sub-octave behavior appears
- X-Fade toward feedback
- Small envelope to Drive CV for punch

Result: bassline with dirty sub undertow and controlled feedback weight

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Patch 3: Tuned drum melody

Use when: you want melodic percussion

- Short drum/click → Input
- Dynamics source pre or post drive, depending punch desired
- X-Fade medium

- FBK raised until each hit rings
- Sequence FBK CV with stepped modulation
- Optional filter in external FBK loop

Result: tom-like or metallic melodic pattern from percussion

Patch 4: External resonant loop voice

Use when: you want Dark Matter to become a semi-autonomous instrument

- FBK OUT → resonant filter → delay → FBK IN
- VCO or noise burst → Input
- Raise FBK
- Tune filter cutoff
- Use Out Polarity switch if needed
- Use CV Control switch to decide whether feedback VCA behaves best before or after the inserted processor

Result: plucked/drone hybrid voice with tunable resonance and evolving melody fragments

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Patch 5: Ambient melody cloud

Use when: you want cinematic textures

- Sparse VCO or sample loop → Input
- FBK OUT → reverb or delay → FBK IN
- X-Fade mostly toward feedback
- Slow LFO to X-Fade CV
- Another slow CV to Treble Boost
- Modest FBK, not maximum

Result: blurred melodic halos and floating overtone movement

Things to watch out for

The manual repeatedly implies this is a **wild feedback device**, so musically:

- small knob changes can matter a lot
- external modules in the feedback loop may invert polarity or radically change gain
- feedback can go from silent to explosive quickly
- use speakers/ears carefully and start levels low

For melody specifically: - if you want **clear notes**, keep some dry signal in the mix - if you want **chaotic but musical**, push FBK and shape with Tone - if the loop disappears, try **Out Polarity** - if it squeals too much, lower FBK or reduce Treble/Drive

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Bottom line

Dark Matter is best used for melody as a feedback-based harmonic instrument layered around another sound source.
It excels at:

- adding **sub-octaves**
- generating **harmonic fills**
- creating **pitched resonant feedback**
- turning **drums into tuned hits**
- making **oscillators into unstable, expressive leads**
- building **external feedback loops** that function like semi-tuned voices

If you pair it with: - a **VCO + sequencer** - a **drum trigger/audio source** - a **filter/delay/reverb in the FBK loop** - some **LFOs/envelopes for CV**

then Dark Matter becomes a very strong tool for **melodic basses, leads, tuned percussion, drones, and evolving harmonic textures**.