Qu-Bit — Synapse

- Manual PDF

Manual PDF

Qu-Bit Synapse: using it to create melodic components

Synapse is not a pitch quantizer or traditional sequencer, but it **can absolutely be used to build melodic material** because it combines:

- 4 crossfaders
- routable/sequential switching
- 8 memory states
- internal +5V offsets
- internal LFOs
- CV/audio compatibility throughout

That means it can act as a:

- stepped CV composer
- phrase selector
- melodic router
- stored-voltage pattern source
- animated modulation source for pitch-related destinations

What Synapse does that matters for melody

From the manual, the most melody-relevant features are:

- **DC-coupled inputs**: works with CV as well as audio

- **Per-channel A/B crossfading**: blend between two voltages per channel
- **+5V DC offset normalled to each B input**: lets each channel generate CV without external sources
- **8 memory locations**: store crossfade positions and recall them with one knob
- **Sequential/routable outputs via Terminal and Advance**
- **Inertia**: slews transitions between stored states
- **Internal LFOs**: can animate pitch/modulation patterns
- **Sum outputs**: combine channels into more complex control voltages

Important melodic concept

Synapse excels when you think of it as a **voltage-scene morphing router**.

Each of the 4 channels can hold a voltage or blend between two voltages. Then the module can:

- save those blends into memory slots
- advance/swizzle routing
- sum channels
- slew transitions

So instead of a classic “one note per step” sequencer, it’s more like:

- **one harmonic/melodic state per memory**
- **one destination/output arrangement per switch state**
- **one evolving phrase through interpolation, switching, and summed CV**

Melodic patch strategies

1. Use Synapse as a 4-stage stored voltage sequencer

This is the most direct melodic use.

How

- Enable the **+5V DC offset** on B inputs.
- Leave A inputs unpatched, or feed them with 0V / another reference voltage.
- Use each channel's crossfade knob to choose a voltage between A and B.
- Send a channel output to an oscillator's **1V/oct** input, ideally through a quantizer if you want strict tuning.
- Use **Advance** to step routing through outputs.

Why it works

With DC offset enabled, each crossfade becomes a voltage chooser.
The manual explicitly notes this can make Synapse function like:

- a **four step sequencer**
- an **eight stage stored voltage source**

Musical result

You can create:

- bassline steps
- lead note contours
- transposition voltages
- motif fragments

Best companion modules

- quantizer
- sample & hold / clock source
- envelope + VCA
- oscillator with stable tracking

Tip

Because the B input is +5V when enabled, the crossfade knob becomes a performance control for stored CV amount. Save multiple memories and you get phrase recall.

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2. Build 8 melodic “phrases” with Memory

Memory is where Synapse becomes especially useful for composition.

How

- Create four voltage settings across the four crossfade channels.
- Save them to one memory slot.
- Change the four fader positions to a new shape.
- Save again.
- Repeat for up to **8 memories**.

Then sweep or CV the **Memory** control to recall different stored voltage arrangements.

Why it’s musical

Each memory slot can represent:

- a chord tone set
- a bass phrase
- a transposition profile
- a melodic contour
- a verse/chorus variation

Important manual behavior

- When a memory location is selected, **crossfade CV inputs are disabled**
- Changes aren’t stored until **Save** is pressed
- Fully CCW on Memory = **memory bypass**

Melodic uses

- 8 different note clusters
- 8 phrase presets
- 8 harmonic regions for transposition
- song section changes without repatching

Strong patch idea

Use: - **Out 1** -> quantizer -> VCO pitch - **Out 2** -> second quantizer/VCO pitch - **Out 3** -> filter cutoff - **Out 4** -> FM amount or wavefold amount

Now each memory slot becomes a full melodic “scene.”

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3. Use it as a melody generator before a quantizer

Synapse is especially powerful **upstream of a quantizer**.

How

Patch Synapse output into: - quantizer input - then quantizer output to oscillator 1V/oct

Why

Synapse can generate rich, unstable, blended, slewed, shuffled voltages. A quantizer then converts those into usable musical notes.

What this gives you

- playable melodic randomness
- phrase morphing
- evolving sequences
- repeated motifs with variation

Great sources for A/B inputs

Feed the A and B inputs with: - slow LFOs - envelopes - offsets - random stepped voltages - another sequencer's rows - pressure/controller CV

Then use Synapse to blend and reroute before quantization.

Result

Instead of programming exact notes, you shape a **melodic probability field** that the quantizer turns into scales/arpeggios.

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4. Crossfade between two pitch sequences

A very strong use case.

How

For each channel: - patch one sequencer row or CV source into **A** - patch another sequence into **B** - send the resulting output to a quantizer or oscillator pitch input

What happens

The crossfade knob and CV let you interpolate between two melodic lines.

Musical outcomes

- phrase mutation
- call/response between two melodies
- morphing bassline
- gradual harmonic transition

With Memory

Store multiple crossfade positions: - Memory 1 = mostly A - Memory 2 = balanced - Memory 3 = mostly B - etc.

Now you have recallable interpolation states between two sequences.

With Inertia

Add glide between memory changes for: - portamento - phrase smearing - expressive transitions

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5. Use 4 channels as harmonic interval generators

Synapse can generate related CVs on multiple outputs.

How

Set each channel to a different fixed CV amount using the +5V offset or external voltage references.

For example: - Ch1 = root - Ch2 = third-ish voltage - Ch3 = fifth-ish voltage - Ch4 = octave or seventh

Then send those outputs to: - multiple quantizers/oscillators - precision adders - switch matrix destinations

Result

You can create: - chord voicings - parallel melodic intervals - stacked canon lines - drone harmony structures

Better with quantizers

Because raw CV won't necessarily correspond to exact intervals, quantizers make this much more musical and repeatable.

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6. Sequentially route one melodic line to different voices

The **Terminal** switching section makes Synapse useful as a melodic distributor.

How

Patch a pitch CV source or melodic blend through Synapse, then use the outputs to address: - multiple oscillators - different quantizers/scales - separate voice chains

Use: - **Terminal encoder** for manual routing shifts - **Advance** input for clocked movement - **Scatter** for shuffled routing

Melodic use

One sequence can be sent to different destinations over time, creating: - rotating counterpoint - pseudo-rounds/canons - changing voice assignments - phrase movement across timbres

Example

- Out 1 -> quantizer in C minor -> VCO 1
- Out 2 -> quantizer in pentatonic -> VCO 2
- Out 3 -> filter ping pitch CV
- Out 4 -> FM oscillator pitch

Advance the switch with a clock and one source becomes a changing melodic orchestrator.

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7. Use Scatter for melodic permutation

The **Scatter** function shuffles output positions.

Why this is good for melody

It creates permutations of where voltages go.

If each output drives a different pitch destination or quantizer, a shuffle creates: - rearranged melodic order - changed voicings - altered call/response behavior - spatialized note movement

Best patch

Set up 4 distinct voltage channels, each feeding different harmonic functions, then trigger Scatter rhythmically but not every beat.

This gives phrase reshuffling without changing the underlying note material.

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8. Use Sum outputs for composite melodic CV

Synapse includes: - **1+2** - **3+4** - **Sum**

From the manual: - **1+2 / 3+4** are post-switch sums - **Sum** is pre-switch sum of each crossfade channel

Melodic use

Summing CV sources is extremely useful for: - transposition - interval stacking - phrase complexity - combining motion layers

Patch examples

- Channel 1 = base pitch contour
- Channel 2 = small interval modulation
- Channel 3 = octave jumps
- Channel 4 = slow transposition

Then: - **Sum** -> quantizer -> oscillator

Now your pitch line is the combined result of multiple independent melodic influences.

Another option

Use: - **1+2** as bass pitch CV - **3+4** as lead pitch CV

This can create related but distinct melodic lines from the same patch.

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9. Use Inertia for melodic glide and phrase smoothing

The **Inertia** control adds slew to changes in: - memory location - crossfade knob moves - crossfade CV input changes

Range is up to **5 seconds**.

Why it matters

This turns abrupt CV changes into: - portamento - slide between notes - phrase rubato feel - smoothed transitions between melodic states

Great use cases

- acid-style slides
- gliding between stored memory phrases
- smoothing random voltages before quantization
- generating legato motion from stepped sources

Tip

Use moderate inertia before a quantizer for evolving melodic movement, or after quantized pitch if you want actual continuous pitch glide.

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10. Internal LFOs for animated melodic modulation

The internal triangle LFOs can modulate each crossfade channel.

Why useful for melody

If the channels are producing pitch CV or transposition voltages, the internal LFOs can create: - vibrato-like pitch motion - note cycling between A and B voltages - repeating melodic oscillation - canon-like phased movement between channels

Key LFO features

- per-channel amplitude
- shared frequency
- multiple relationship modes:
- Phase Offset
- Alternating
- Cascading
- Synchronous

Best melodic application

Use internal LFOs **before quantization**.
That way the LFOs don't just create vibrato—they create **motion through discrete notes** once quantized.

Especially useful modes

- **Phase Offset**: creates rotating melodic movement between channels
- **Alternating**: useful for call/response two-voice phrases
- **Cascading**: excellent for sequential melodic activation
- **Synchronous**: stacked harmonic pulsing

Practical melodic patch examples

Patch 1: 8-state bass sequencer

Goal

A recallable bassline source.

Patch

- Enable **+5V DC offset**
- Set four channels to four different CV levels
- Patch **Sum** -> quantizer -> VCO 1V/oct
- Clock envelopes/VCA separately
- Save 8 different memory states

Result

Each memory becomes a different bass pattern contour.
Use the Memory knob manually or with CV to move between bass phrases.

Patch 2: Morphing lead between two melodies

Goal

Blend two sequencers into one evolving lead.

Patch

- Sequencer A CV -> channel A inputs
- Sequencer B CV -> channel B inputs
- Crossfade outputs -> quantizer -> VCO
- Use crossfade CV inputs or internal LFOs
- Add **Inertia** for glide

Result

A lead line that continuously mutates between two source melodies.

Patch 3: Four-note chord engine

Goal

Create harmonic material from fixed voltages.

Patch

- Enable +5V offset
- Set channels to four different voltage levels
- Out 1-4 -> four quantizer channels / four oscillators
- Save multiple memory states as different voicings
- Use Advance or Terminal to rotate assignments

Result

Stored chord voicings and melodic inversions with dynamic voice reassignment.

Patch 4: Quantized melody from animated voltages

Goal

Generate self-moving melodic content.

Patch

- Enable +5V offset or patch offsets/random CV into A/B inputs
- Set LFO amplitudes per channel
- Choose **Cascading** or **Phase Offset** LFO relationship

- Patch **Sum** -> quantizer -> oscillator

Result

An automatically evolving melodic line with recurring structure.

Patch 5: Counterpoint by switched destination routing

Goal

One CV source creates multiple interrelated melodic voices.

Patch

- Build 4 distinct CV blends on Synapse
- Route outputs to:
- Out 1 -> quantizer 1 -> VCO 1
- Out 2 -> quantizer 2 -> VCO 2
- Out 3 -> precision adder transpose input
- Out 4 -> FM voice pitch
- Use **Advance** with clock divisions
- Occasionally trigger **Scatter**

Result

Rotating contrapuntal lines and shifting harmonic functions.

Patch 6: Memory as song-section transposer

Goal

Use Synapse to transpose a melodic sequence differently per section.

Patch

- Main sequencer -> precision adder input A
- Synapse output -> precision adder transpose input
- Build memory states containing different DC voltages
- Save 8 transposition values or 8 four-channel transposition sets

Result

Verse, chorus, bridge transpositions are instantly recallable.

Things to watch out for

1. Raw pitch CV may need quantization

Synapse outputs continuous CV. For tonal melodic work, a **quantizer** is highly recommended.

2. Memory disables channel CV inputs

When a memory slot is selected, the crossfade CV inputs are disabled.
So if your melody depends on external modulation per channel, memory mode changes that behavior.

3. LFO frequency goes very high

It ranges up to **1kHz**, which is more audio-rate territory.
For melody, you'll usually want much slower settings unless intentionally creating complex CV behavior.

4. Switching and pitch

Click-less switching is great for audio, but for pitch CV changes you may still want to manage: - clock timing - quantizer response - slew via Inertia

5. Saved state behavior

A lot of the module's state is stored to permanent memory. That's helpful for performance patches, but remember your last-used settings may reappear on reboot.

Best companion modules for melodic systems

Synapse pairs especially well with:

- **Quantizers**: essential for tonal pitch generation
- **Precision adders**: for transposition workflows
- **Sequential clocks/gates**: to drive Advance and event timing
- **Envelope/VCA chains**: to articulate notes
- **Oscillators with good 1V/oct tracking**
- **Clock dividers/probability modules**: for phrase variation
- **Buffered mults/mixers**: to distribute melodic CV
- **Sample and hold/random sources**: for semi-composed melodies

Best musical roles for Synapse

If you're building melodic music, Synapse is strongest as:

1. **a stored voltage phrase generator**
2. **a sequencer morphing tool**
3. **a transposition and interval source**
4. **a multi-voice pitch router**
5. **an evolving CV composer before a quantizer**

It is less ideal as: - a precise note-entry sequencer - a standalone quantized melody source - a traditional keyboard replacement

Bottom line

Synapse is best understood as a **melodic infrastructure module** rather than a dedicated sequencer.

It helps create melody by letting you:

- generate CV from offsets
- blend between two melodic voltages
- store phrase states
- slew between them
- sum them into more complex pitch contours
- route them across multiple voices
- animate them with internal LFOs
- permute destination assignments

In a Eurorack melodic system, the most powerful setup is usually:

Synapse -> quantizer / precision adder -> oscillator(s)

That turns its fluid, morphing voltage behavior into playable, structured musical notes.

Generated With Eurorack Processor