

Pittsburgh Modular – Synthesizer Box

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Pittsburgh Modular Synthesizer Box – creative patch ideas with other modules

The **Synthesizer Box** is basically a compact semi-modular voice made from: - a **complex analog oscillator** with sub, blade wave shaping, FM, PWM/waveshape modulation - a **wave mixer** - a **3-mode LPG / filter / VCA** - a **wide-range LFO** - an **ADSR** - a **final VCA** - built-in **glide**

What makes it especially fun in a larger Eurorack system is that the normalised internal routings can be overridden almost everywhere. So it can be:

1. a complete standalone synth voice,
2. a collection of utility submodules, or
3. a modulation/audio hub for other voices.

Quick summary of the normalised architecture

Useful to keep in mind before patching externally:

- **LFO TRI** is internally routed to:
 - oscillator **FM**
 - oscillator **MOD CV**
- **Envelope OUT** is internally routed to:

- **LPG CV**
- **VCA CV**
- Oscillator/mixer is internally routed toward the **LPG**
- **LPG OUT** is internally routed to **VCA IN**
- **1V/O IN** is hardwired through **Glide** into the oscillator

That means the module already gives you a playable “default voice,” and every patch cable you insert can selectively break that normalization.

Best roles for the Synthesizer Box in a system

1. Compact main voice

Use it as your primary mono voice and expand its modulation and timbral range with external modules.

Best companions: - **sequencer** or keyboard CV source - **clocked modulation** - **sample & hold / random** - **extra envelopes** - **effects** like delay, reverb, wavefolder, distortion

2. West-coast flavored voice core

The **blade waveform**, **sub**, **LPG ping mode**, and internal modulation make it particularly nice for plucky, organic, woody, and animated tones.

Best companions: - **function generator / slope** - **random voltage** - **low pass gate or resonator** - **wavefolder** - **strike / trigger sequencer**

3. Breakout utility cluster

You can split it apart: - use the **LFO** elsewhere - use the **ADSR** on another voice - use the **VCA** as a utility amp - use the **LPG** as an external processor - use oscillator outputs independently

This is especially valuable in small systems.

Creative patch ideas

1. Dual-motion oscillator animation

The oscillator has two juicy destinations: - **FM CV IN** - **MOD CV IN**

Instead of relying on the internal LFO for both, send **two different modulation sources**: - a **slow random** or stepped CV into **MOD CV IN** - a **sine/triangle LFO** or envelope into **FM CV IN**

Result

The pitch movement and waveform movement become decorrelated, which makes the oscillator feel much more alive.

Great companion modules

- **Make Noise Wogglebug**
- **Mutable Instruments Marbles**
- **Xaoc Batumi**
- any **function generator** like Maths, Rampage, Delta-V

2. Audio-rate modulation from another oscillator

Because the LFO can go wide range and the oscillator has FM input with **linear/exponential switch**, the Synthesizer Box likes cross-modulation.

Patch

- External oscillator sine/triangle -> **FM CV IN**
- Try **linear FM** first

- Tune the external oscillator to harmonic intervals or detuned offsets

Result

Metallic, vocal, bell-ish, tearing, and complex analog FM tones.

Best module partners

- a clean sine-core VCO:
 - **Intellijel Dixie II+**
 - **Doepfer A-110-6**
 - **Instruō Ts-L**
- or another character oscillator for dirty FM

Tip: also send a related envelope to **MOD CV IN** for evolving spectra.

3. Use the blade input as a timbre injection point

The **BLADE IN** is one of the most interesting inputs on the module. Since the blade waveform is a special complex saw-derived shape, feeding voltage there should let you animate it in ways that differ from ordinary PWM.

Try feeding **BLADE IN** with

- a slow triangle LFO
- an envelope
- audio-rate oscillator
- filtered noise
- stepped random voltage

Result

Shifting asymmetry, spectral movement, sharp vocal/tearing textures, and unstable “alive” harmonics.

Best partners

- another VCO
- random source
- envelope follower
- chaotic modulation source

A neat patch: - **noise** -> **slew limiter** -> **BLADE IN** This gives semi-fluid, organic timbral drift.

4. Ping the LPG with trigger patterns

The module's **LPG** has a **PING** mode that converts modulation into a short trigger-like strike. This is one of the most musical parts of the Synthesizer Box.

Patch

- Set LPG mode to **LPG**
- Set mod/ping switch to **PING**
- Send triggers, gates, or rhythmic pulses into **LPG CV IN**
- Feed oscillator, external audio, or noise into **LPG IN**

Result

Bongo-like, plucked string, woody percussion, struck-filter sounds.

Companion modules

- trigger sequencers:
- **Tiptop Circadian Rhythms**
- **Steppy**

- **Pamela's New Workout**
- probability trigger generators
- burst generators
- noise/percussion sources

This patch is fantastic with: - **noise into LPG IN** for hand drum / shaker / click percussion - **external wavetable or FM oscillator into LPG IN** for plucked digital-organic hybrids

5. Use the LPG as an external processor

Because **LPG IN** overrides the internal audio routing, the Synthesizer Box can become a character processor for other modules.

Feed into LPG IN

- drum loops from a sample player
- a digital oscillator
- chords from a polyphonic voice mixed to mono
- noise or field recordings
- another synth voice

Then use: - internal envelope normalised to LPG CV - or external modulation into **LPG CV IN**

Result

A more organic, dynamic, less static version of the source. In LPG mode especially, louder moments get brighter while quieter parts stay more natural.

Best source types

- harsh digital oscillators
- wavetable voices
- samples
- external drum voices

This is a very strong way to “analog-ize” sterile sound sources.

6. Use envelope and LPG separately for two jobs

One overlooked trick is to break the module into independent sections.

Example patch

- Use **ENV OUT** to modulate an external filter or oscillator
- Feed an external modulation source into **LPG CV IN**
- Use Synthesizer Box oscillator through LPG/VCA as usual

Result

You effectively gain an extra system envelope while still using the voice.

Even better: - Use **ENV OUT** on an external reverb/delay CV input while the internal LPG is pinged by triggers.

This gives coherent articulation across the whole patch.

7. Parallel waveform processing

The oscillator offers multiple outs: - **TRI OUT** - **S/B OUT** - **SQR OUT** - **MIX OUT**

These are gold in a modular setup.

Patch idea

- **TRI OUT** -> wavefolder
- **SQR OUT** -> clock divider / subharmonic processing / logic / comparator
- **S/B OUT** -> filter
- mix externally

Result

A single oscillator becomes a layered composite voice with separate spectral lanes.

Great supporting modules

- mixers
- VCAs
- wavefolders
- filters
- resonators
- crossfaders

Specific modules: - **Xaoc Tallin** or **Intellijel Quad VCA** for dynamic mixing - **Bastl Ikarie** or **QPAS** for stereo filtering - **Joranalogue Fold 6** or **Intellijel Bifold** for triangle folding

8. Build a pseudo-duophonic patch

The Synthesizer Box is monophonic, but you can make it behave like two related voices.

Patch

- Use **MIX OUT** as voice A through the internal LPG/VCA
- Send **TRI OUT** or **SQR OUT** to an external filter + VCA as voice B
- Use same pitch CV to both paths
- Modulate one path differently

Result

Layered intervals, pseudo-paraphonic behavior, stereo spreads, body + edge combinations.

For example: - internal path = plucky LPG voice - external path = long filtered drone or delayed pad layer

9. Turn the LFO into an audio oscillator

The LFO is described as **wide range**, including audio-rate modulation territory.

Patch

- LFO **TRI OUT** or **SQR OUT** -> external mixer / filter / VCA
- Sequence the rate manually or CV it indirectly through a VCA-and-offset setup elsewhere

Result

A bonus lo-fi oscillator or modulation-rate audio source.

Fun uses

- audio-rate modulation for another oscillator
- sub-audio square for rhythmic gates
- triangle as a second crude audio source to layer with the main VCO

Especially good if you want: - beating - rough FM - pseudo-sync-like interactions

10. Clock the whole voice with stepped random

Since the oscillator and LPG both respond well to modulation, combining a **sample & hold** or **quantized random** source with trigger-derived articulation gets very musical.

Patch

- random quantized CV -> **1V/O IN**
- trigger sequence -> **ENV IN**

- slower random -> **MOD CV IN**
- another slow random or envelope -> **LPG CV IN**

Result

Self-playing melodic lines with animated timbre and organic articulation.

Excellent partner modules

- **Mutable Marbles**
 - **Turing Machine**
 - **Pam's** with random/quantizer support
 - any quantizer + noise/sample-hold combo
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11. External wavfolder after the triangle output

The **triangle output** is perfect folder material.

Patch

- **TRI OUT** -> wavfolder -> external VCA/filter
- keep internal voice running from **MIX OUT** or LPG/VCA chain

Result

You get two versions of the same oscillator: - one smoother and folded - one raw/internal

This is a fantastic stereo or layered patch.

Recommended modules

- **Make Noise Fold**
- **Intellijel Bifold**
- **Joranalogue Fold 6**

- **Serge-style wavefolder clones**
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12. Use square out for logic-derived rhythms

The **SQR OUT** is useful not only as audio but as a modulation/gate source when tuned/LFO'd creatively.

Patch

- send **SQR OUT** into:
- logic modules
- clock dividers
- comparators
- switch modules

Combine with the internal LFO square or external clock.

Result

Rhythmic structures derived from pitch relationships. Great for techno, generative, and polyrhythmic patches.

Companion modules

- **Doepfer logic**
 - **Joranalogue Compare 2**
 - **switches** like Doepfer A-151
 - clock dividers / Boolean modules
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13. LPG percussion voice from noise or samples

The LPG section can make excellent percussion even without using the oscillator.

Patch

- noise / sample / click source -> **LPG IN**
- triggers -> **LPG CV IN** in **PING** mode
- optional: **LPG OUT** -> internal VCA or external distortion

Result

Bongos, toms, claves, hi-hats, muted plucks, wooden knocks.

Best source modules

- noise source
- sample player
- very short envelopes/clicks
- digital percussion modules

A great trick: - send **pitched noise** or resonant filter noise into the LPG for hand-drum style sounds.

14. Animate the final VCA separately from the LPG

Because there is both an **LPG** and a separate **VCA**, you can get more nuanced articulation than on many compact voices.

Patch

- external envelope -> **VCA CV IN**
- different external envelope or trigger source -> **LPG CV IN**
- use LPG for tone/body transient
- use VCA for macro amplitude contour

Result

Very expressive plucks, bowed-like shapes, reverse-feeling swells, punch + tail behavior.

Ideal modulation sources

- snappy envelope for LPG
- slower ADSR for VCA
- or vice versa

This is one of the most powerful upgrades you can give the module.

15. Run the oscillator into external spectral processors, then back

You can take one oscillator output externally, process it, and then return it to the module's downstream sections.

Example

- **S/B OUT** -> phaser / wavefolder / resonator / frequency shifter
- processed signal -> **LPG IN** or **VCA IN**

Result

You keep the Synthesizer Box's articulation path while radically changing the timbre source.

Especially good processors

- resonators
- comb filters
- phasers
- analog distortion
- frequency shifters
- spectral processors

Examples: - **Mutable Rings** as resonator - **Doepfer A-126-2** frequency shifter - **Erica Phaser** - **triphonic/stereo filter**

16. Use glide with quantized sequencing for liquid acid lines

The built-in glide is hardwired between **1V/O IN** and oscillator, which makes it naturally playable.

Patch

- quantized sequencer -> **1V/O IN**
- gate sequencer -> **ENV IN**
- set moderate resonance in lowpass mode or use LPG mode
- route accent-like envelope to **MOD CV IN** or **FM CV IN**

Result

Acid-adjacent monosynth lines, but with more analog organic variation than a classic ladder synth.

Great sequencer types

- step sequencer with slides
- generative quantizer
- probability sequencer

Bonus

Use the **sub oscillator** for huge bassline weight.

17. Turn it into a drone laboratory

The module is also great without conventional note gates.

Patch

- open the VCA partially
- set LPG to filter or LPG mode

- use slow modulation into:
- **FM CV IN**
- **MOD CV IN**
- **LPG CV IN**
- optionally process outputs through delay/reverb

Result

Dense analog drone beds with evolving harmonics.

Great support modules

- slow CV sources
- chaotic modulators
- matrix mixer
- stereo effects

Specific ideas: - **Batumi** for 4 related LFOs - **Maths** for drifting envelopes - **matrix mixer** for cross-patched modulation blends - long stereo delay + shimmer reverb

18. Create self-playing feedback ecosystems

Because there are several outputs and several modulation inputs, the Synthesizer Box invites controlled feedback.

Safe-ish feedback experiments

- **S/B OUT** -> external attenuator/VCA -> **BLADE IN**
- **LFO TRI OUT** externally attenuated/mixed with random -> **FM CV IN**
- **ENV OUT** -> external attenuator -> **MOD CV IN**
- **LPG OUT** -> distortion/filter -> external VCA -> back to **VCA IN** or **LPG IN**

Result

Wild, semi-chaotic analog behaviors, especially with careful attenuation.

Important

Use attenuators, attenuverters, or VCAs in feedback loops.

Best helper modules

- Happy Nerding 3xMIA
 - Frap 321
 - Intellijel Triplatt
 - Quad VCA
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19. Pair it with a matrix mixer

If I were adding one “secret weapon” utility to maximize this module, it would be a **matrix mixer**.

Why

You have multiple modulation targets: - FM - MOD CV - LPG CV - VCA CV externally if overridden - BLADE IN externally

And multiple modulation sources: - internal LFO - envelope - external random - external envelopes - external audio-rate oscillators

A matrix mixer lets you distribute and combine them in subtle amounts.

Result

A small voice turns into a highly animated ecosystem.

Great options

- Doepfer A-138m

- **AI**Synthesis matrix mixer
 - any compact CV matrix
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20. Stereo expansion patch

The Synthesizer Box itself is mono, but it expands beautifully to stereo.

Patch

- internal main voice -> left-side effect chain
- separate waveform output -> right-side effect chain
- modulate each side differently

Example: - **MIX OUT** -> LPG/VCA -> chorus -> left - **TRI OUT** -> wavefolder
-> filter -> delay -> right

Result

Huge stereo images from a single oscillator core.

Good stereo helpers

- stereo delay
 - stereo filter
 - dual VCA
 - panner / crossfader
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Best module types to pair with Synthesizer Box

If you want the most mileage, these are the highest-value additions:

Essential companions

- attenuator / attenuverter
- utility mixer
- extra VCA
- sequencer
- clock source

Modulation expansion

- random voltage source
- function generator
- multi-LFO
- sample & hold
- envelope follower

Timbre expansion

- wavefolder
- resonator
- stereo filter
- distortion / saturation
- frequency shifter

Performance expansion

- joystick controller
 - pressure controller
 - touch controller
 - manual gate / trigger source
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Specific module pairings I'd recommend

Make Noise Maths

Perfect with Synthesizer Box because it gives: - extra envelopes - slews - modulation mixing - cycling LFOs - trigger manipulation

Use it for: - shaped pings into LPG - slewed random into BLADE IN - envelope variations to FM or MOD CV

Xaoc Batumi

A great modulation expander: - quadrature motion - synced LFOs - multiple related shapes

Excellent for evolving FM, waveform morphing, and LPG animation.

Mutable Instruments Marbles

Fantastic if you want the module to become a generative voice: - pitch - triggers - random modulation - musical unpredictability

Intellijel Quad VCA

Super useful because the Synthesizer Box gets much deeper when modulation is attenuated and mixed carefully.

Joranalogue Fold 6 / Intellijel Bifold

The triangle output begs for folding.

Pamela's New Workout

Great as a timing and modulation brain: - clocks - triggers - synced LFOs - random - envelopes in a pinch

Make Noise Mimeophon / XAOC Timiszoara / stereo delays and reverbs

The Synthesizer Box sounds great through time-based effects, especially plucks and drones.

Patch recipes

Recipe 1: Organic plucked bass

- Sequencer pitch -> **1V/O IN**
- Sequencer gate -> **ENV IN**
- Oscillator **MIX OUT** internal to LPG/VCA
- LPG mode = **LPG**
- Mod/Ping = **MOD**
- Envelope internal to LPG/VCA
- slow random -> **MOD CV IN**
- sub oscillator on

Add: - mild saturation after **VCA OUT**

Result: woody, rubbery, animated bass.

Recipe 2: Metallic dual-FM lead

- External sine oscillator -> **FM CV IN**
- Set FM switch to **linear**
- envelope or LFO -> **MOD CV IN**
- use **S/B OUT** into LPG

- reverb/delay after VCA

Result: bright, singing, metallic lead tones.

Recipe 3: LPG drum lab

- noise source -> **LPG IN**
- trigger sequencer -> **LPG CV IN**
- LPG set to **PING**
- LPG mode = **LPG**
- **LPG OUT** -> VCA IN
- external envelope -> **VCA CV IN**

Result: shaped percussion with more control over tail length.

Recipe 4: Split oscillator stereo

- **TRI OUT** -> wavefolder -> left channel
- **S/B OUT** -> filter -> right channel
- same pitch sequence to Synth Box
- independent modulation for each chain

Result: wide stereo voice with shared tuning but different spectral motion.

Recipe 5: Self-playing ambient machine

- Random quantizer -> **1V/O IN**
- sparse gates -> **ENV IN**
- slow LFO -> **FM CV IN**
- random slew -> **MOD CV IN**
- another slow CV -> **LPG CV IN**
- VCA OUT -> delay -> reverb

Result: generative ambient lines with constantly shifting timbre.

Things to watch out for

- The module gets much better with **attenuation**. A lot of the most musical patches will depend on reducing modulation depth.
 - The **LPG ping** can be especially sensitive to trigger level and shape; try different trigger/gate sources.
 - The **wide-range LFO** may enter audio-rate territory, which is great, but can quickly become intense in FM patches.
 - Since several routings are internally normalled, if something behaves differently after patching, check whether you've overridden an internal source.
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Overall creative verdict

The Synthesizer Box is strongest when treated not just as a “small synth voice,” but as a **patch-programmable analog ecosystem**. Its best tricks come from: - separating the normalled sections, - using external modulation to replace the built-in routings, - exploiting the **blade waveform** and **LPG pinging**, - layering the multiple oscillator outputs in parallel, - and adding utilities like **VCAs, attenuverters, mixers, and random sources**.

If you want, I can also provide: 1. **10 genre-specific patches** for the Synthesizer Box,
2. a **small-system pairing guide** (e.g. best 3 modules to add), or
3. a **signal-flow diagram** of its internal routings and how to override them.

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