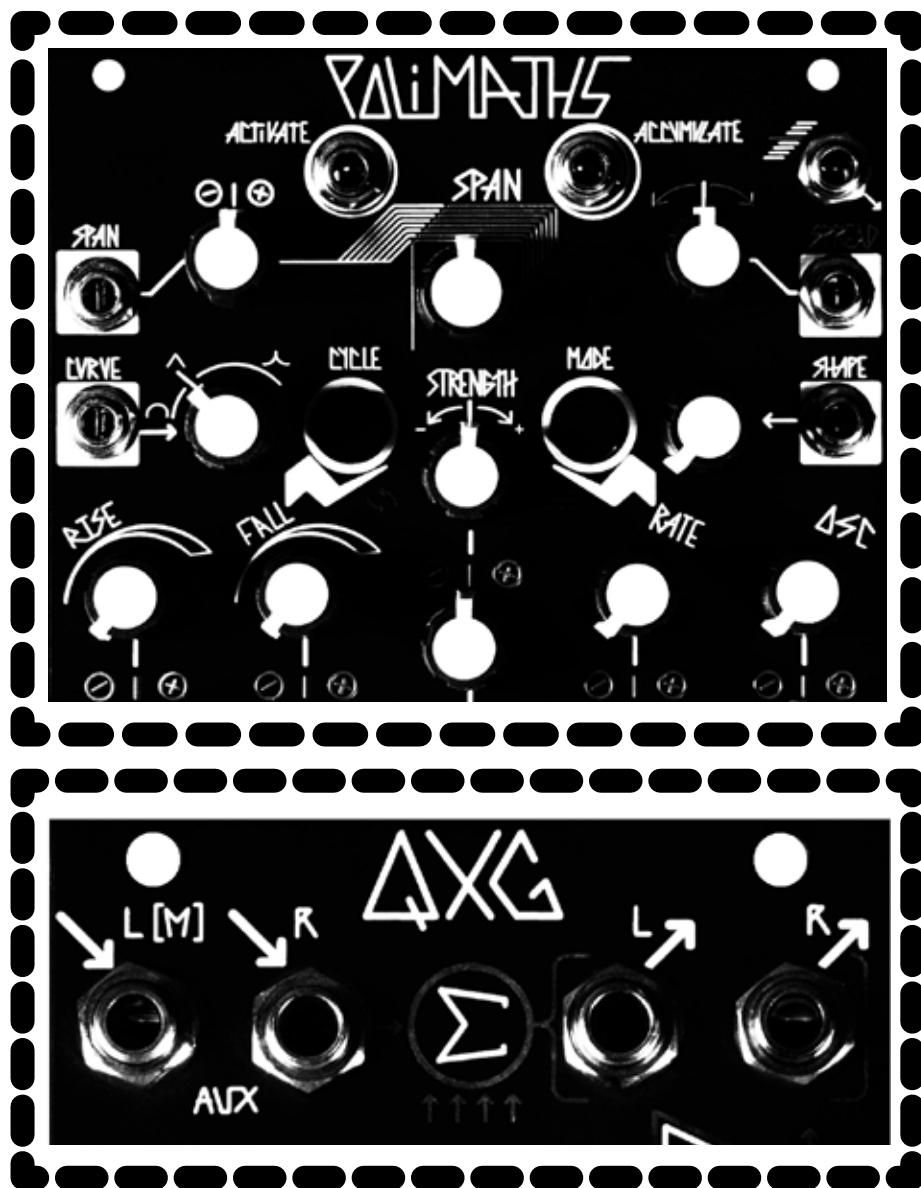
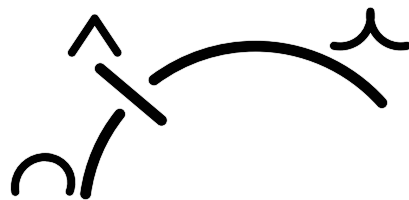


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MAKE NOISE ZINE ISSUE 8

OCTOBER, 2025



POLIMATHS



PoliMATHS is an eight channel CV and Audio event generator for the New Universal Synthesizer System or any Eurorack modular synthesizer. It **uses a single set of controls to generate complex functions at eight independent channel outputs.**

Functions can be activated directly in variable, and even arbitrary patterns using any control voltage patched to Span; activated chronologically using Round or activated simultaneously using Parallel (or via self-Cycling). Adding additional clock or gate signals to the Accumulate, Reset, and/or Cycle Gate Ins expands all of these possibilities by **allowing for controlled activation of multiple channels simultaneously.**

PoliMATHS' functions are made up of two components: **first, the well-known Rise-Fall envelope with variable Curve** (familiar from the original MATHS and Function and 0-Coast Slope); and **second, a variable-Shape Oscillation whose amplitude is controlled over time by the Rise-Fall envelopes.** This oscillation can be either low frequency for the creation of complex control functions, or audio frequency for native generation of audio events/notes with optional tuned pitch control via 1v/oct control voltage.

AVAILABLE NOW!!



WHAT FIRST INSPIRED THE IDEA FOR THE NEW UNIVERSAL SYNTHESIZER SYSTEM?

Tony: Playing a lot of polysynths and a lot of modular synths over the years and wanting to interface with a polysynth in the way you interface with a modular synth. Also wanting that sort of “exploded drawing” style of functionality where everything is brought up to the surface for the artist to access (which is something that is distinctly missing from most polysynths but is a core concept of the modular synth). So wanting those two worlds to meet.

MODULES IN THE NUSS FAMILY SHARE COMMON CONCEPTS—FUNCTIONALITY LIKE SPREAD AND PHILOSOPHIES LIKE “FROM ONE WE CREATE MANY.” WERE THESE CONCEPTS DEVELOPED IN TANDEM WITH POLIMATHS OR WAS POLIMATHS DESIGNED WITH THEM IN MIND?

Mark: I feel like they were developed together. We looked at MIDI and different specs of how to control a polyphonic system, and we settled on wanting it to be patchable with signals that already existed, so that you could drop parts of these in as you needed to. We also felt that a modular system is something you conduct rather than play like a keyboard. You can make a few modulations to change the whole sound without typing in notes in exactly the same way.

Ben: A lot of the seeds of the ideas were there from the start. Tony wrote up a giant NUSS document with all of the initial ideas for it, and not all of them made it— we cherry picked the things that were applicable as we went and they changed and grew naturally over time to fit the module we were trying to make and as we learned things that did and didn't work.

Mark: We went down a lot of roads that we had to bail on, which was a healthy way to develop the modules, just not the fastest.

Ben: What was your experience, Tony?

Tony: A lot of shattered dreams [laughter], but then new dreams. There were a lot of ideas we kicked around that initially seemed incredible and then we would implement them and realize they weren't as incredible as we thought they would be. What's great about this team is instead of feeling like “oh we did the work to do this thing, let's just get it out there” we went with our gut when things weren't incredible enough and there was more work to be done.

WHEN DID DEVELOPMENT ON POLIMATHS BEGIN?

Mark: Right when the development of MultiMod ended!

Ben: I checked the development history, and to date there have been 54 firmware releases for Polimaths.

Tony: You know Ben, that's not too bad! I believe there were close to 100 versions of the first René so you're doing good!

WHEN LOOKING AT POLIMATHS, ONE OF THE NEW FUNCTIONALITIES THAT JUMPS OUT IS OSCILLATIONS. CAN YOU SPEAK ABOUT THE DEVELOPMENT OF THIS FUNCTIONALITY AND WHAT WERE SOME OF THE WAYS IN WHICH YOU ENVISIONED THIS NEW CONTROL TO BE USED?

Mark: That was one of the first things we did, on one of the first iterations of Polimaths.

Ben: And then we got rid of it and brought it back again.

Tony: Like many things, in these module developments it came together slowly and organically enough that it's a little bit of a blur honestly. Now it seems like the canonical functionality, but if I try to trace it back it's a mess of many firmware versions and conversations.

Ben: We had to go through many wrong answers to find the right one. It's one of the simpler solutions, and sometimes simpler is best.

Tony: Modulate the modulation.

THE OSCILLATIONS COMPONENT OF POLIMATHS CAN OSCILLATE AT AUDIO RATE, ACCEPT V/OCT AND EVEN HAS A WAVESHAPE CONTROL. IS THIS THE OSCILLATOR WITHIN THE NEW UNIVERSAL SYNTHESIZER SYSTEM OR IS THERE MORE TO COME?

Tony: Yes and yes.

HOW ARE THE ACTIVATION MODES ON POLIMATHS DISTINCT FROM ONE ANOTHER, AND WHAT DESIGN CONSIDERATIONS WENT INTO THEIR UTILITY?

Tony: One of them is Round, which is the one I was most excited about. I had built a very convoluted Ableton Live session just so I could do hocketing and play multiple 0-Coasts— basically recreating an Oberheim 4 Voice with four 0-Coasts. I really like the effect of hocketing where a melody is split across different voices which can sound different or be modulated differently and timbral shifts can happen over time.

Mark: Channel Index is another one, and it's built from the communication spec—how the NUSS modules communicate with each other. It's a way to analog address channels. Round and Parallel modes get you immediate movement and are a little easier to work with, where Channel Index can do whatever you need it to do.

Tony: Ben, wasn't there a connection between Parallel Mode and the multiples and divisors from MultiMod?

Ben: There might have been initially but then we overhauled them at some point to be better suited for driving an envelope (or in this case eight envelopes). It was a lot of fun making the divisor set, and I think what we landed on is balanced, playable and fun.

WILL THESE ACTIVATION MODES BE SEEN AGAIN ON FUTURE NUSS MODULES?

Tony: Yes.

MODULATING 8 CHANNELS WITH A SINGLE SET OF CONTROLS IS NO SMALL TASK! ON POLIMATHS THIS IS ACCOMPLISHED IN TWO WAYS: SPREAD AND MODULATION DISSEMINATION. HOW ARE THEY DIFFERENT?

Ben: It's kind like live vs. sample & hold. I think we had both concepts from the beginning, but at some point we realized that Spread should normal to a certain set of inputs and then you would override it by patching in. It means you have one main Spread control and can set the amount per destination or that you can override it with the sample and held modulation dissemination concept.

Tony: To add to that, both of these come from the initial concept of "From one we create many." The idea was if you have one control source— one LFO— but you need to modulate the Fall time of eight functions of PoliMATHS how do we do that? Well, we are not typically activating all eight functions simultaneously— you can but we are typically not— and instead we're activating them one at a time, or maybe two or three at a time or whatever. And so the idea is whatever is being Activated is receiving that modulation source at the time of Activation and then when the next channel is Activated it's getting that source so it's sort of like a way to take that one control voltage and disseminating it across the channels. If you can imagine a patch cable where it's a regular patch cable at one end and on the other its this cable jack that moves from channel to channel, it's not just patched into one Fall jack— it's patched into all eight. And any time any of those eight are active it's modulating. It's a way of spreading that modulation across the eight channels. I believe the Spread concept was born out of the MultiMod development, wasn't it?

Ben: It might have been. I remember on earlier versions of the PoliMATHS you could do both— you could Mod Dissemination and Spread at the same time, and it was too much. That was one of the cuts.

Tony: Yeah, there were so many things we've done where it seems like it's going to be great but when we try it we realize we've pushed the cart off the cliff. Spread is cool because it's live but again it's weighted across all eight channels depending on where you're pointing it. That's really powerful because you can have eight channels that are not being modulated in the exact same way.

Ben: That weighting did come directly from the MultiMod, with some tweaks.

THE NEW UNIVERSAL SYNTHESIZER SYSTEM NOT ONLY PROVIDES A NEW (AND GROWING) GLOSSARY OF PATCH TERMS AND CONCEPTS, BUT PRESENTS THEM WITH AN ENCOURAGEMENT FOR EXPERIMENTATION AND DISCOVERY. HOW IMPORTANT TO YOU IN THIS NEW PARADIGM ARE THE CONCEPTS OF PLAY AND EXPLORATION IN THE PATCHING PROCESS?

Ben: It's definitely crucial. Encouraging people to explore the space and the NUSS concepts by playing them was a goal for us. It should feel like fun and you don't have to understand some of these heady concepts just to make it go and make interesting sounds.

Mark: I think it's fun to be able to use all the NUSS module to get things moving quickly and there is a sense in which if you had a sequencer for every modulation destination and wanted to be very fiddly about it you could do that but I'm never going to do that.

Tony: I feel like other companies have already mastered that. The Elektron instruments, they nailed that, where every step could have dramatically different values: the hyper-programmed electronic music, and we've been living with that for, what, 10-15 years now? It's been a while, and it's produced a lot of great music but this is definitely not that. So I would think play and exploration are some of the top values for the NUSS modules.

Mark: That definitely can be done with these modules, but it isn't our priority.

Tony: For me, I don't need that level of control. I'm happy to have things land where they land.



THE EXPERIMENTAL MEDITATION CLUB



thoughts and reflections by KELLY

Tony and I drove to a meditation retreat a couple of hours outside of Asheville despite our concern that we were volunteering to be in a cult. This was a week before I was going to have four organs removed. Ten months after I started meditating daily to face my fear of dose dense chemo for my advanced Inflammatory Breast Cancer diagnosis. Jeff Warren, a meditation teacher who resonated with me on the Calm App, was leading this retreat.

Meditation can be tricky. Elusive even. In the Fall of 2021, via an online course, Tony and I meditated regularly. The time with my love, a treasure, but the meditation practice—a bore and waste of my time. My racing brain is my personality, I believed. Why tamp it down? This is my super power. It requires incessant thought feeding. I created a prolific rumination station. Nothing like facing death to get you to change the way you exist in the world!

To our delight, Jeff was as chill as he seemed on the app, and the place was inviting. New insights emerged for dealing with the chronic pain caused by treatment (I was on a strong drug that made my feet feel like they were on fire), and by the end of the weekend, I had an idea. I talked with Jeff, told him I'd like to create a resource for folks enduring chemo, provide them with tips from pals, healing sounds, and guided meditations. I asked if he knew any meditation teachers who would want to work with me.

He said, Yeah, you can do this. You meditate everyday. The most important part is understanding what it's like to go through chemo. Jeff is an advocate for democratizing meditation. I created Chemo Sessions to serve as a companion to folks in the infusion room. <https://chemosessions.substack.com/>

When Hurricane Helene ravaged our community last September, we had to evacuate for my medical treatment since the cancer center was closed indefinitely. I continued to think about the ways that meditation helped me through something extremely challenging, and how it could be a resource for community members processing so much grief. We knew the potential of using our synths to create a sonic environment that would facilitate connection to one's self and each other, and we knew the power of meditating with strangers and friends.

Through the Experimental Meditation Club, we provide space for introspective exploration facilitated through guided meditations and sonic accompaniment. We share tools folks can incorporate into their own meditation practice: home base, breath techniques, counting, noting methods, and Welcome to the Party (shout out to Jeff Warren for this idea). We dig into concepts like equanimity and self-compassion. Our final meditation is a loving-kindness practice with the aim of helping people step into the world with more appreciation and lightness without looking away from what is dark and difficult.

While our project is geared toward neophytes and meditation skeptics, everyone is welcome. Meditation could be for you! Our invitation is to show up and see what happens. No judgment. We're moving toward ease, acknowledgement, acceptance, and growth.

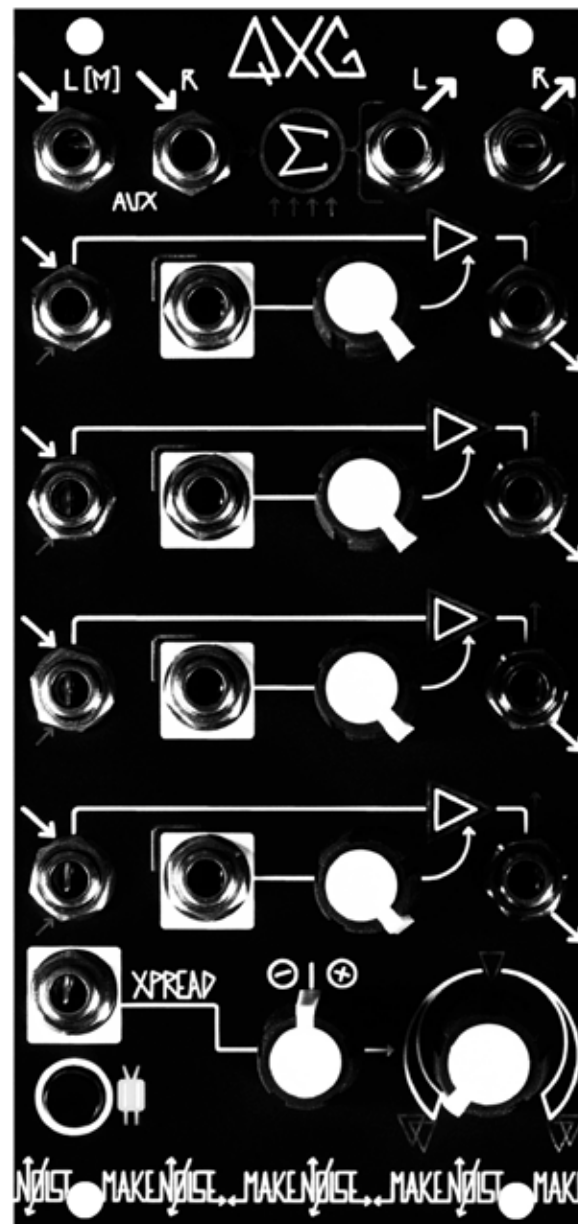
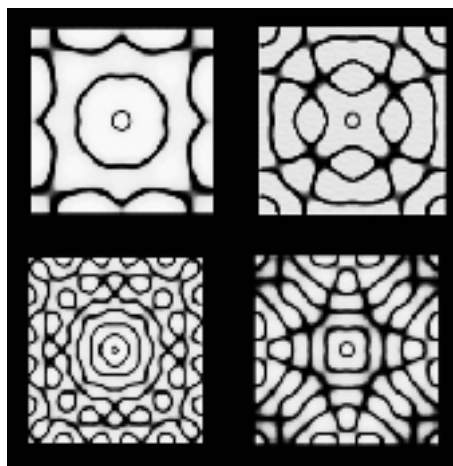
"The Experimental Meditation Club is both a way to be in community and to prepare to be in community as meditation can set us up to be our best selves and to intentionally show up in the world."

Four Tuesdays in a row, we convene. While people are encouraged to come to all four, each session also stands alone so folks can come whenever they are available. We do two meditations in each session. The first one is heavily guided, and provides various tools to use throughout. The second one I lead you into it, and then you use the methods you've learned along with the sonic accompaniment provided by Tony on his Make Noise system. In between the meditations, we might do a movement together or have a short discussion (depends on the vibe of the room). And we provide resources to help people continue meditating.

We didn't know what would happen when we decided to do this project. Thanks to Bryce, Events Director at Ayurprana Listening Room, for saying a big Yes and volunteering his time so we could offer this for free, especially post Hurricane Helene.

People have told us so many things since January about our approach and the impact.

>>>the sounds help them feel less overwhelmed ^^^ they didn't know it was okay to have distracting thoughts *** the ease of it motivated them to keep coming <<< they started a meditation practice because of it & that's changed their life and how they respond to hard things >>> they now feel more love for the world ^^^ they are nicer to themselves *** they can't wait to get back together and will we do it again and when and hopefully soon.



The Quad Stereo Gate (QXG) music synthesizer module is a Four Channel Stereo Low Pass Gate and Mixer.

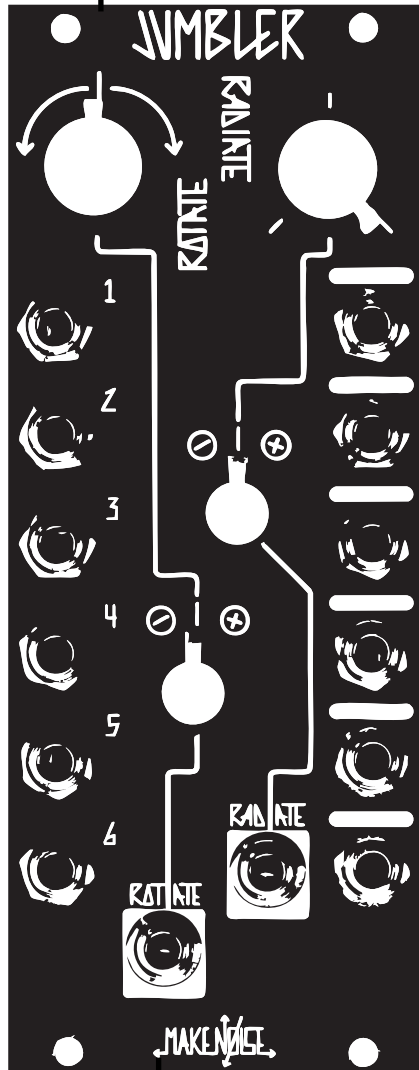
Like the DXG before it, the **QXG** utilizes a new low pass gate circuit that does not use vactrols. This circuit is 100% analog and its response was arrived at after many months tailoring it to meet or exceed the expectations that have been set by all the vactrol low pass gates that Make Noise has created over the years.

Additionally the QXG adds a Vactrol button to select between a Slow, low-pass-gate-like response emulating the decay time of a vactrol (Vactrol button ON), and a Fast precision response that still maintains the gentle filtering characteristic (Vactrol button OFF). Fast response can be especially useful when patching QXG with complex and quickly-changing functions such as those generated by PoliMATHS with the OSC circuit in use.

AVAILABLE NOW!!

ALSO AVAILABLE FROM THE LINE-UP OF MODULES FOR THE NEW UNIVERSAL SYNTHESIZER SYSTEM

JUMBLER



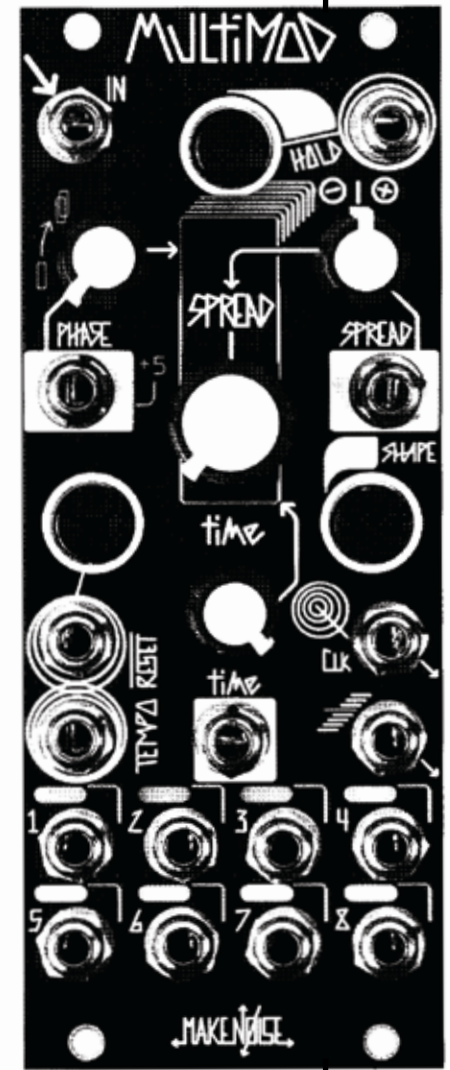
Jumbler is a six channel analog signal combiner and distributor.

It gives you powerful two-parameter access to the rearrangement of both origins and destinations for up to six modular signals.

One to six inputs are routed to one to six outputs, in an order determined by the **Rotate** control, and combination determined by the **Radiate** control. Unlike a simple switch module, Jumbler's analog VCA-based design is specially geared for smooth transitions and hybrid signals.

**BOTH MODULES
ARE OUT NOW!!!**

MULTIMOD



MultiMod takes a single control signal and ***copies it 8 times, additionally modifying those copies by weighted adjustment of their relative phase and speed.***

The result is a flock of related modulation signals, all derived from the same single input.

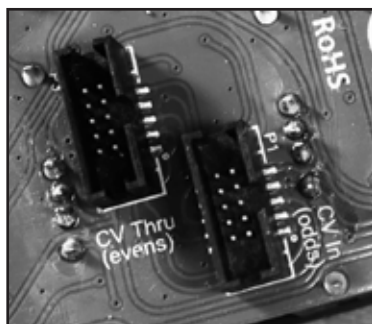
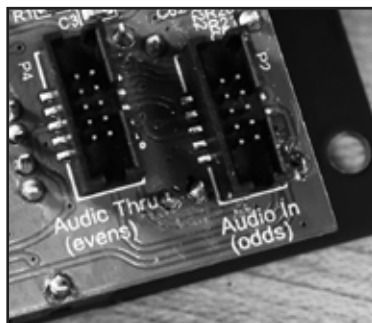
Head to our website
for more information,
makenoisemusic.com

WHAT ARE THE AUDIO AND CV HEADERS ON



?

There are four, small shrouded headers on the back of QXG: Audio In and Audio Thru, as well as CV In and CV Thru.



They connect to the headers on other NUSS modules (like MultiMod & PoliMATHS) allowing for 8 channels of audio and control voltage to be normalled to the audio and CV inputs on a pair of QXGs!

In this way, 8 channels can be dynamically managed without the need for 16 patch cables to be used on the front of the modules!!



"WHAT ARE YOU LISTENING TO/ WATCHING/DIGGING THIS FALL?"

recommendations from
the MAKE NOISE CREW

Lee

Pete Cannon - *Amiga Jungle*
The French Connection (film)
Akai rack samplers

Meg

Cycling
Gardening
Dungeons & Dragons

Lewis

Denzel Washington movies
Colin Miller - *Losin'*
Victor Vieira-Branco's Bark Culture -
Warm Wisdom

Listing to:
Mietze Conte
Yaeji
Elkka

Pete

Carola Baer - *The Story of Valerie*
Yuri Morozov - *The Inexplicable*
World on a Wire (film)

Watching:
King of the Hill (tv)

Ryan

Sabiwa - 輪廻
Conan - *Violence Dimensions*
System 7 - *Point 3 Water Album*

Sam

Aguirre, the Wrath of God (film)
Kelela - *Waitin' (unplugged)*
Mitch Murder - *Beach Business*

Eric

Enxin/Onyx - *In Rapture*
Farewell Phoenix - *The Angels in These Fields*
Autechre - *Sign*

Mark

Keith Jarrett - *The Köln Concert*
Panda Bear - *Sinister Gift*
Pere Ubu - *Modern Dance* (RIP)

Tony

FRANCIS BEBEY - *Psychedelic Sanza*
1982-1984
Pan American - *In Daylight Dub*
Summer Jam:
"Love on the Big Screen"
new single from Animal Collective

Ben

Geordie Greep - *The New Sound*
Hella - *Tripper*
Hakushi Hasegawa - *Mahōgakkō*

Walker

The Beach Boys - *The Smile Sessions*
Pino Palladino and Blake Mills -
That Wasn't A Dream

Bayley

Mere Fever - *Bright Water*
Mom - 3
Chris Rainbow -
Looking Over My Shoulder
Herbie Hancock - *Speak Like A Child*
Lucrecia Dalt - *A Danger To Ourselves*