



GOMA PRO

GOMA II

COSYOS

5V

Ext

GOMA II

User Manual

v1.0



Thank you for purchasing GOMA II.

GOMA II is our new take on the classic attenuverter-mixer concept. It stands for Generator, Offset, Mixer, Attenuverter.

Featuring 4 channels within a 4HP width, GOMA II pushes the boundaries of space efficiency, maintaining intuitive operation and high-end components for max precision (low tolerance resistors, low noise/distortion opamps).

GOMA II offers 4 channels to attenuate or polarize (attenuverter) any audio or CV signal. Additionally, each channel can act as a high precision voltage generator ($-5V$ to $+5V$) to offset another channel or control external parameters.

The 4 channels can be processed separately or summed through cascade mixing, which can extend further than a single module since all the GOMA family (I, II, Pro) can be daisy chained to unlock virtually infinite mixing.

Waranty

BLACK NOISE warrants its products to be free of defects in materials or workmanship and to be conform with the specifications at the time of shipment for a period of two years from the date of purchase. During that period any malfunctioning or damaged units will be repaired, service and calibrated into your workshop.

This warranty does not cover any problems resulting from damages during shipping, incorrect installation or power supply, abusive treatment, or any other obvious user-inflicted fault. If your product warranty is passed, it still can be serviced as long as parts are available in our workshop. We reserve the right to charge for labor, parts and transit expenses where applicable.

Before sending your product to our workshop please contact us for RMA and details. Any unsolicited parcel will be rejected and or returned. The postage to our workshop is on the customer. The return of your module is on us. BLACK NOISE cannot take any responsibility for damages caused during transport.

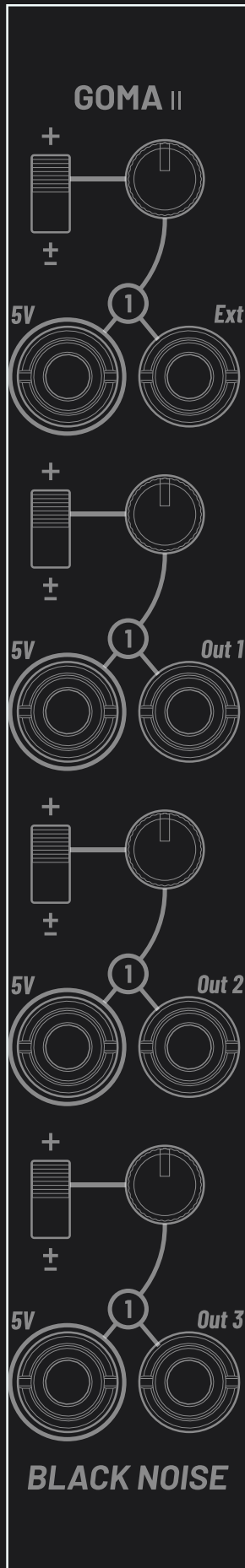
Contact us

contact@blacknoisemodular.com



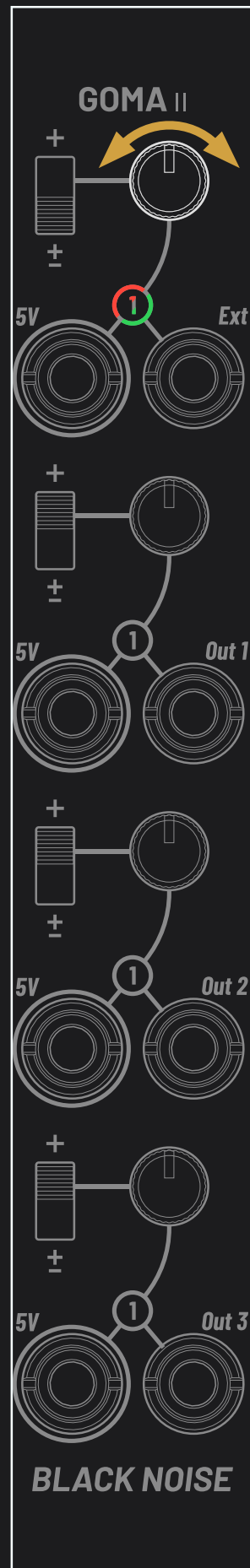
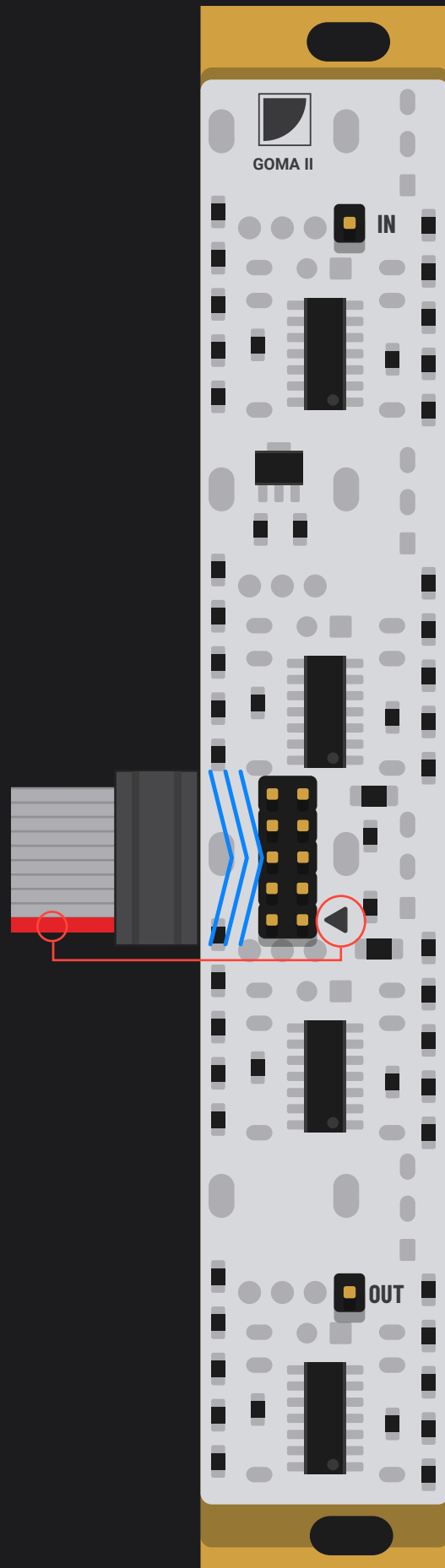
Specs

Width:	4HP
Depth:	20mm
Power :	+12V: 44ma
	-12V: 44ma
	+5V: 0ma



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Starting GOMA II

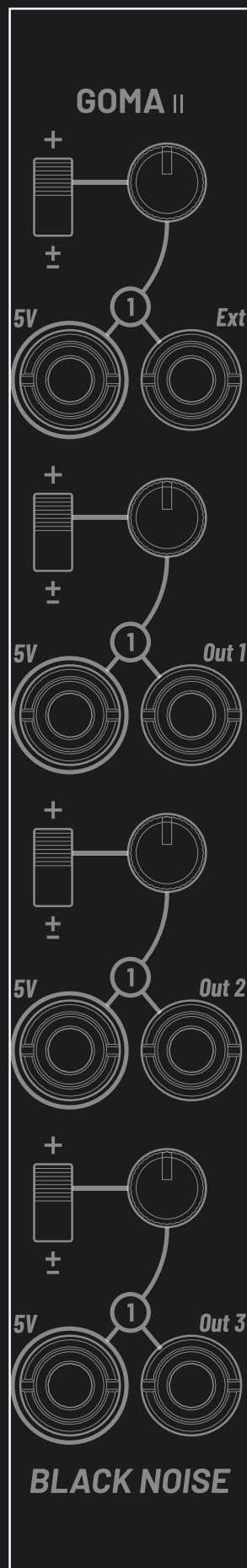
Installation

1. Turn off your eurorack system and pull off the cord.
2. Connect the provided ribbon cable's 16-pin head to you to the system's power bus, making sure the red stripe matches the one indicated on the bus
3. Connect the provided ribbon cable's 10-pin head to the GOMA II, making sure the red stripe matches the one indicated on the board. Red stripe down!
4. Place GOMA II on the rails of your system.
5. Put your system's power cord back in and turn it on.

Test

1. Move the first knob. the "1" LED should light up according to the knob position.
2. GOMA II is ready. Have fun!

If the test procedure described above, comes to fail, don't hesitate to reach out with BLACK NOISE.

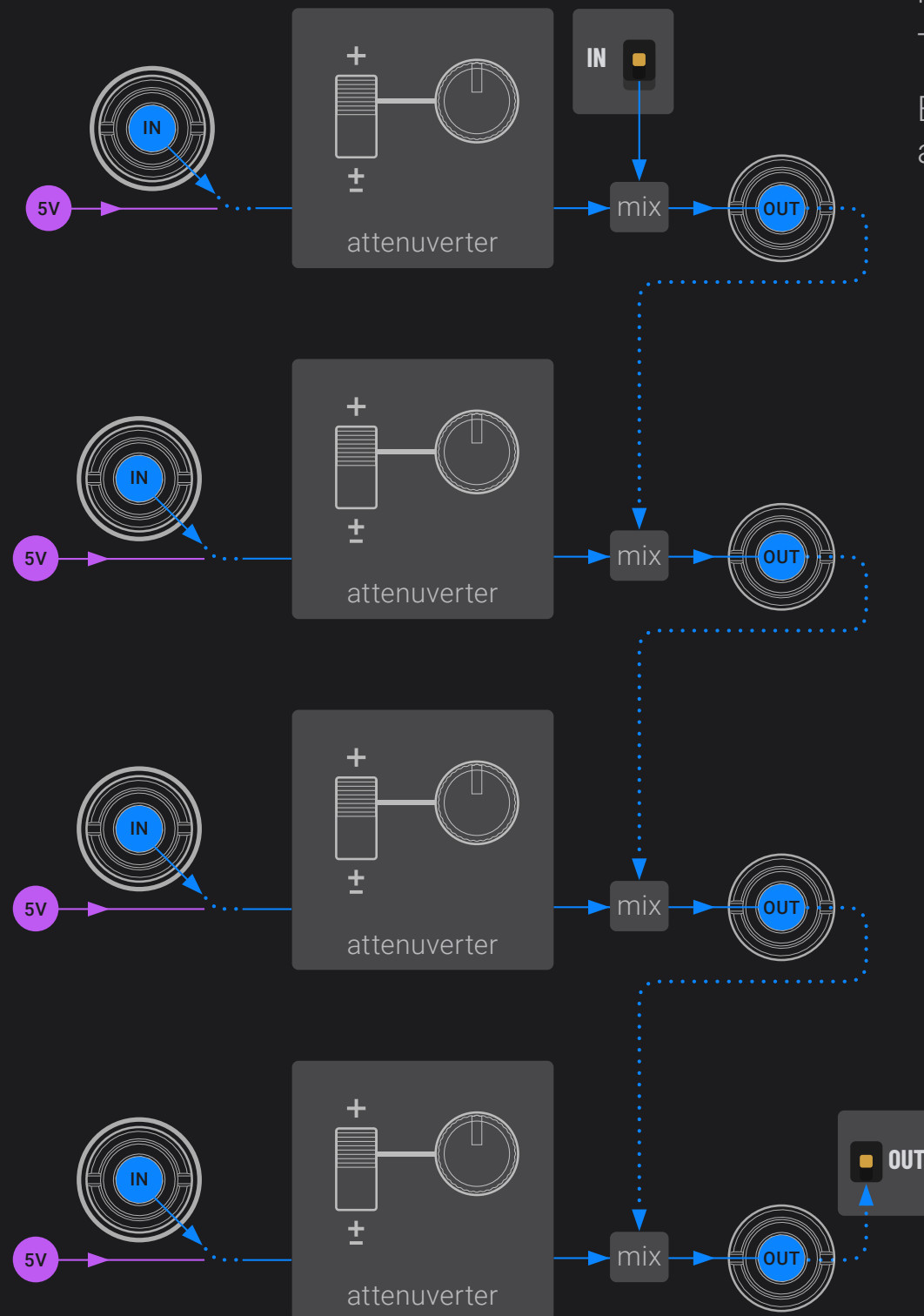


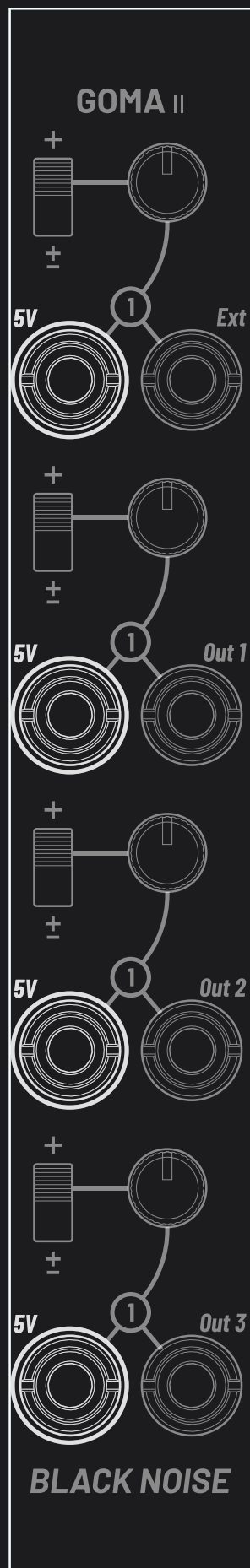
Structure

GOMA II offers 4 channels normalized to 5 volts, processed individually by the attenuverters.

Their outputs are cascaded for mixing purposes.

Back panel IN and OUT pins enable daisy chaining any modules from the GOMA family together.





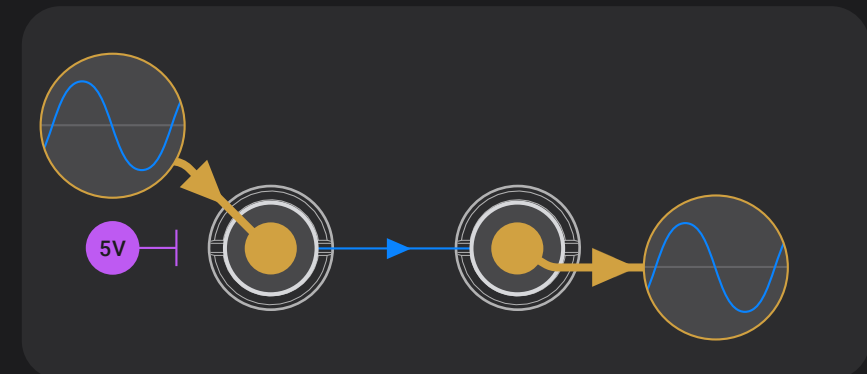
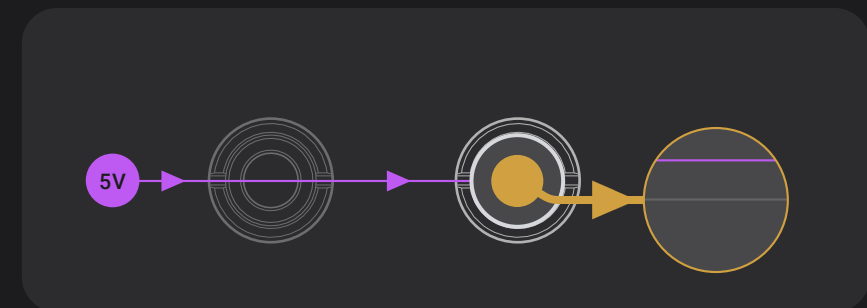
Features

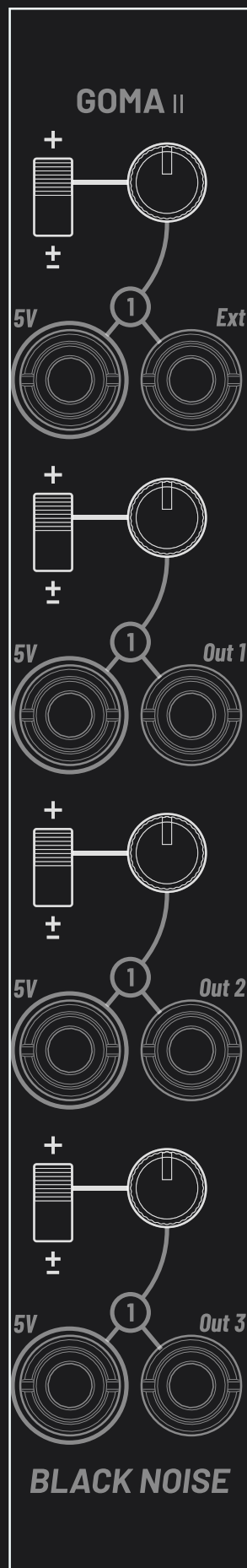
Input normalization: fixed voltage generator

While each channel handles external signals, they are normalized to a high precision 5V internal reference when no input jack is connected.

It can be used to offset another channel or to control modulation inputs.

Inserting a jack in the input breaks the 5V connection and taking the jack out restores it, potentially causing unwanted pops when processing audio signals. Set the knob to zero before unplugging.





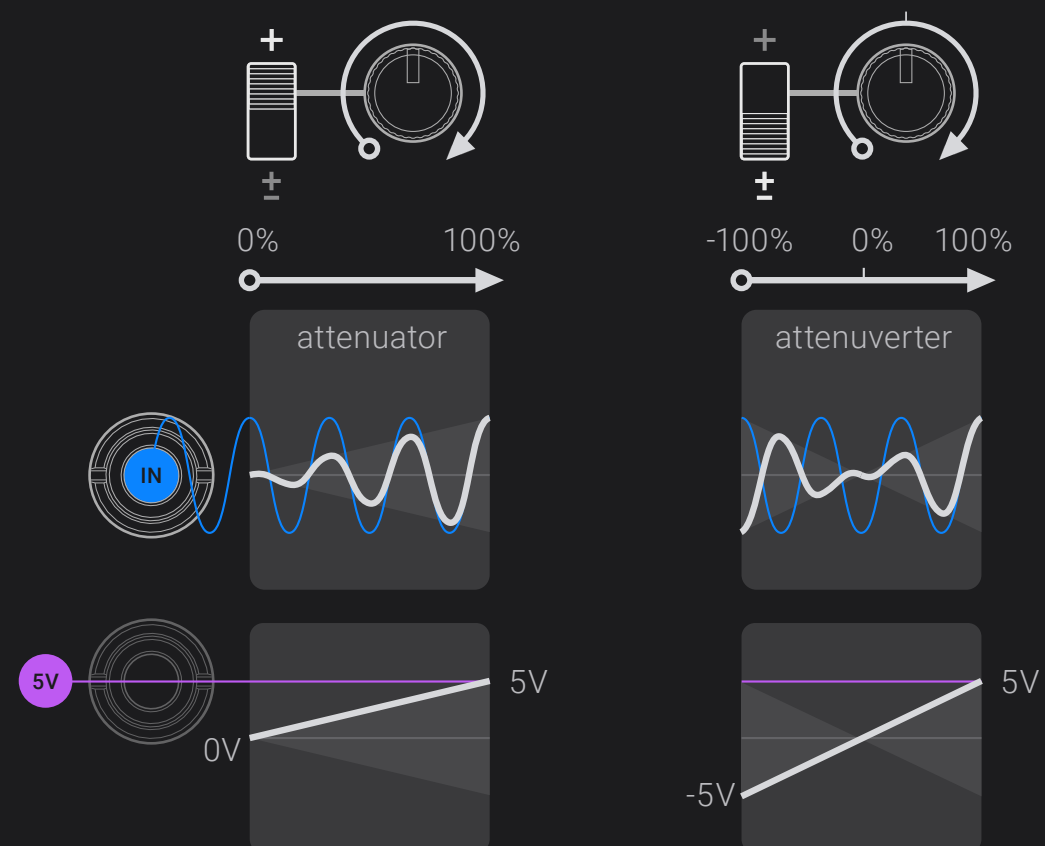
Features

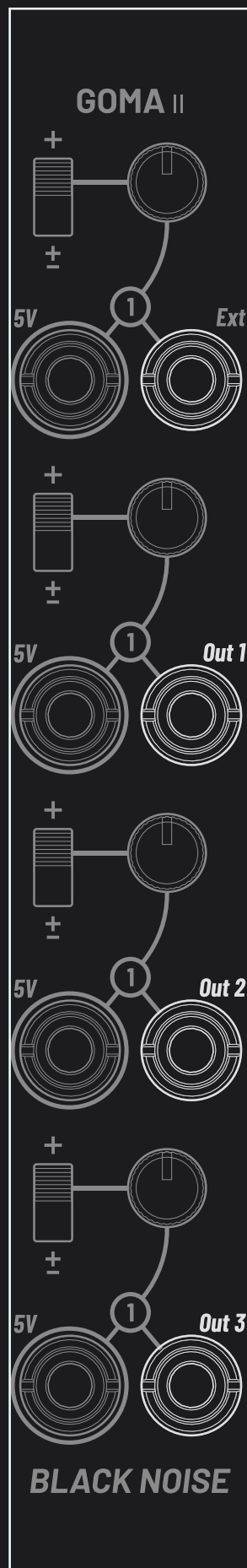
Attenuverter

The 2-position switch set each channel's knob behavior.

- + Attenuator, controlling the amplitude (aka "volume") from 0% to 100%.
- +/- Attenuverter (aka polarizer) with 0% at center position. Clockwise direction provides attenuation from 0% to 100%. Counterclockwise offers similar outcome with an inverted version of the signal: positive voltage becomes negative, and vice versa.

This section also processes the 5V internal source to dial any value using the knob.



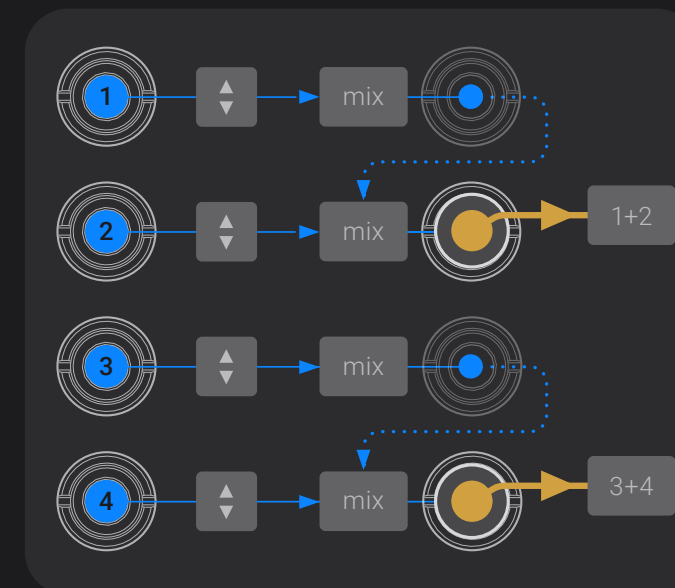
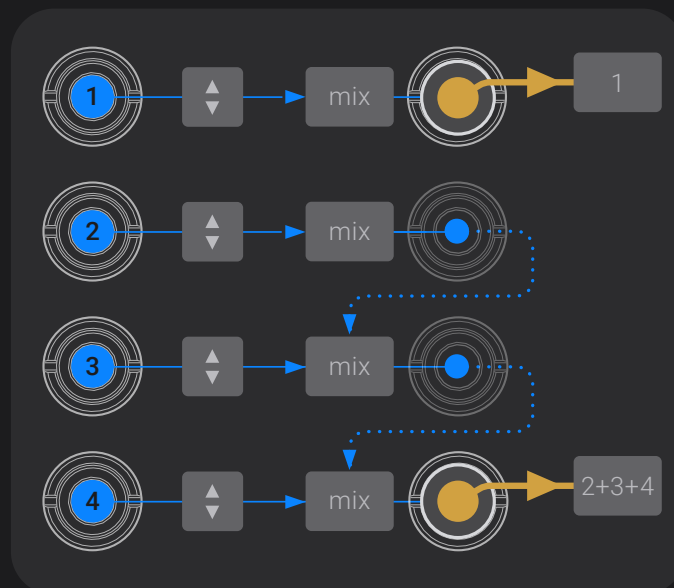
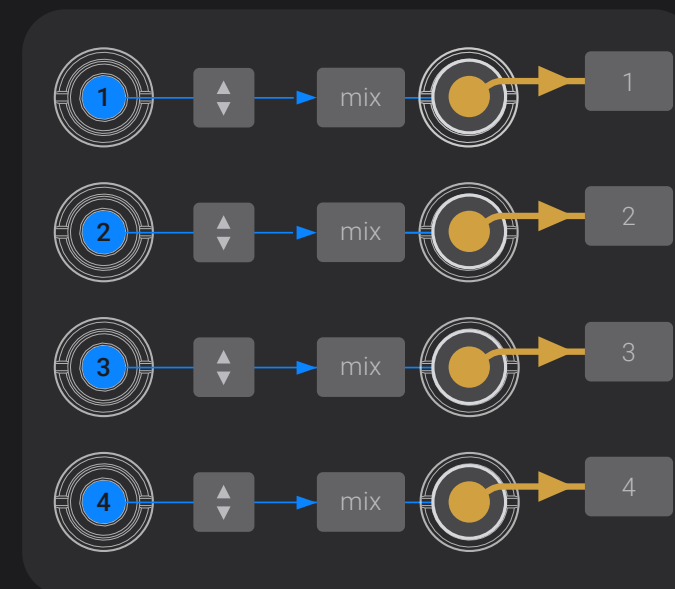
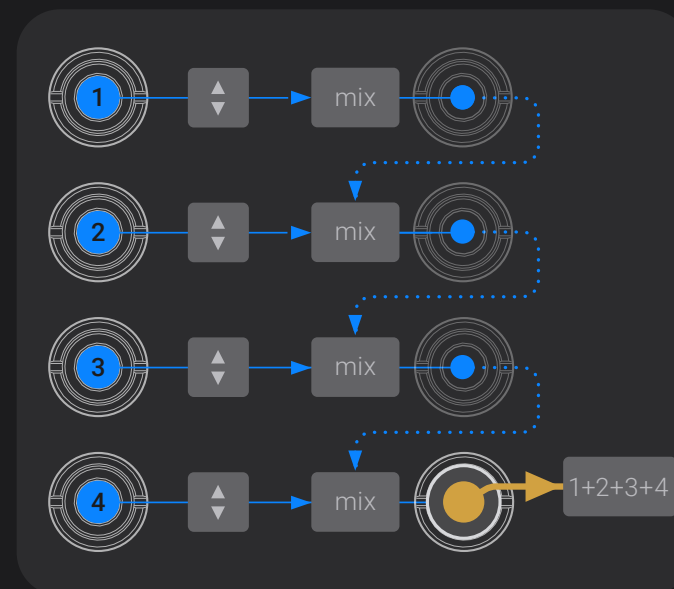


Features

Cascade Mixer

Unpatched outputs are automatically mixed with the next channel's output, every unpatched output forming a link in a flexible mixing chain.

Patching only the last output of the module turns it into a standard mixer.



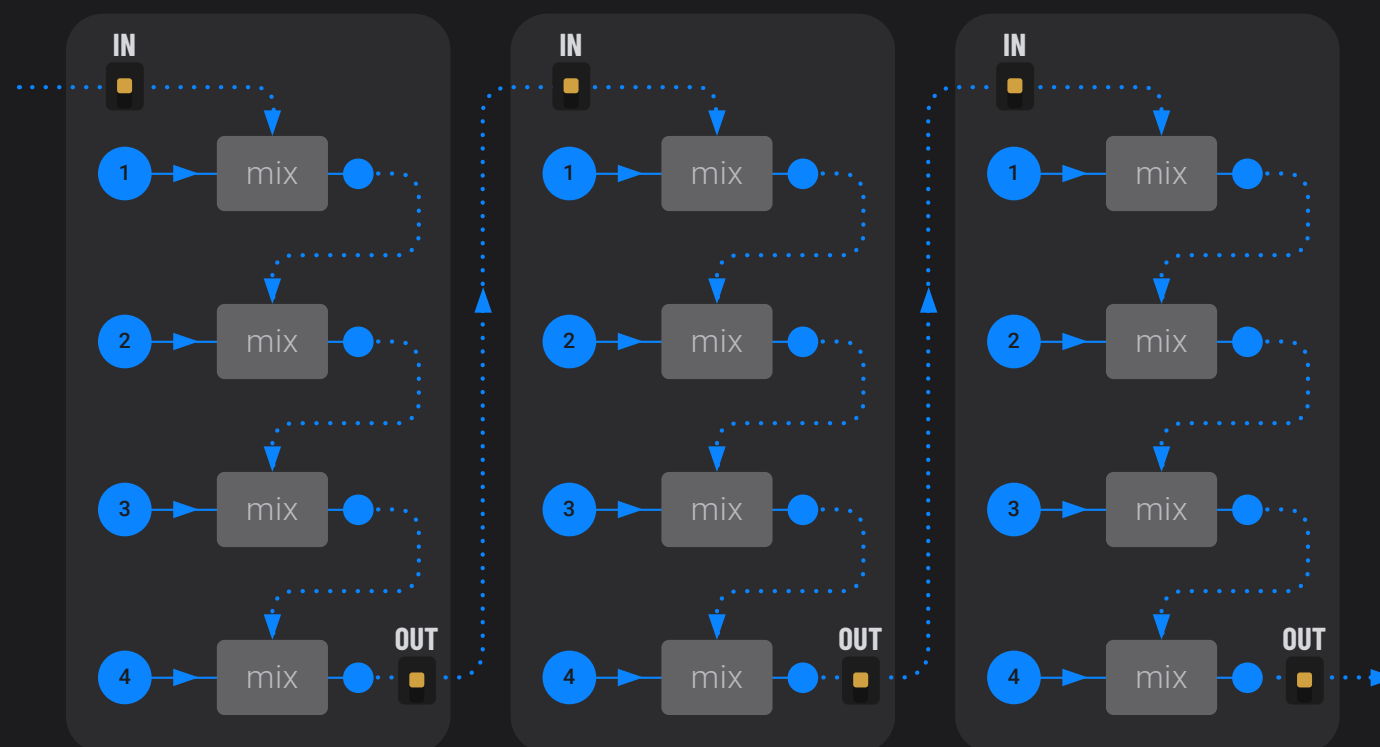


Features

Daisy chain

The cascade mixing system described above can be extended across any modules from the GOMA family, by using the included 1-pin cable to connect the OUT pin from the first module to the IN pin from the next module.

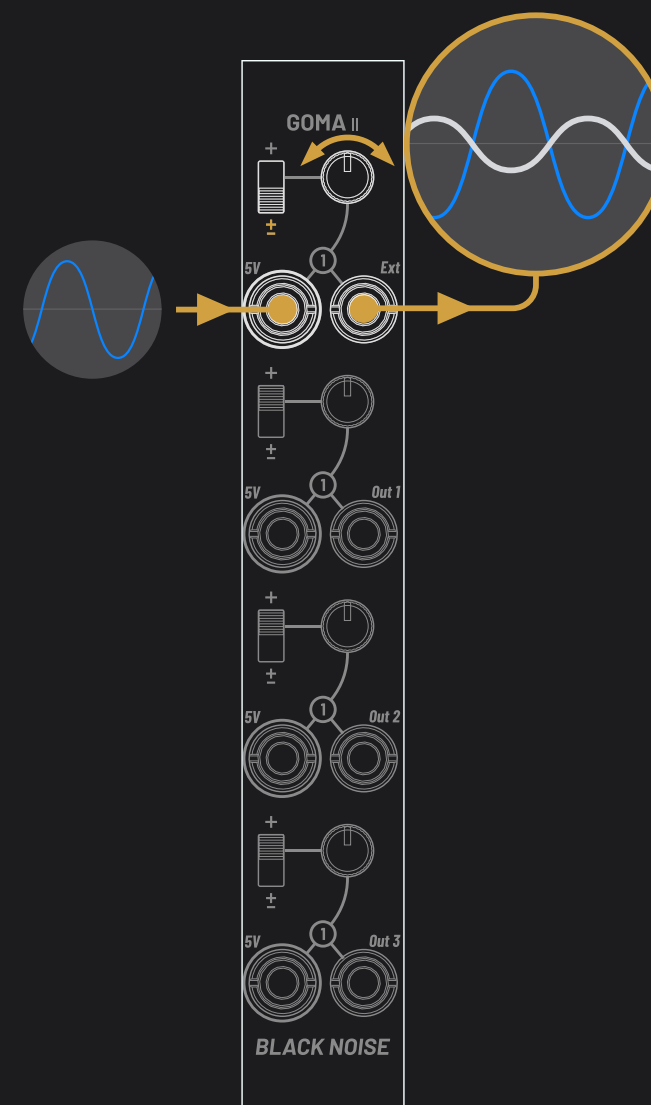
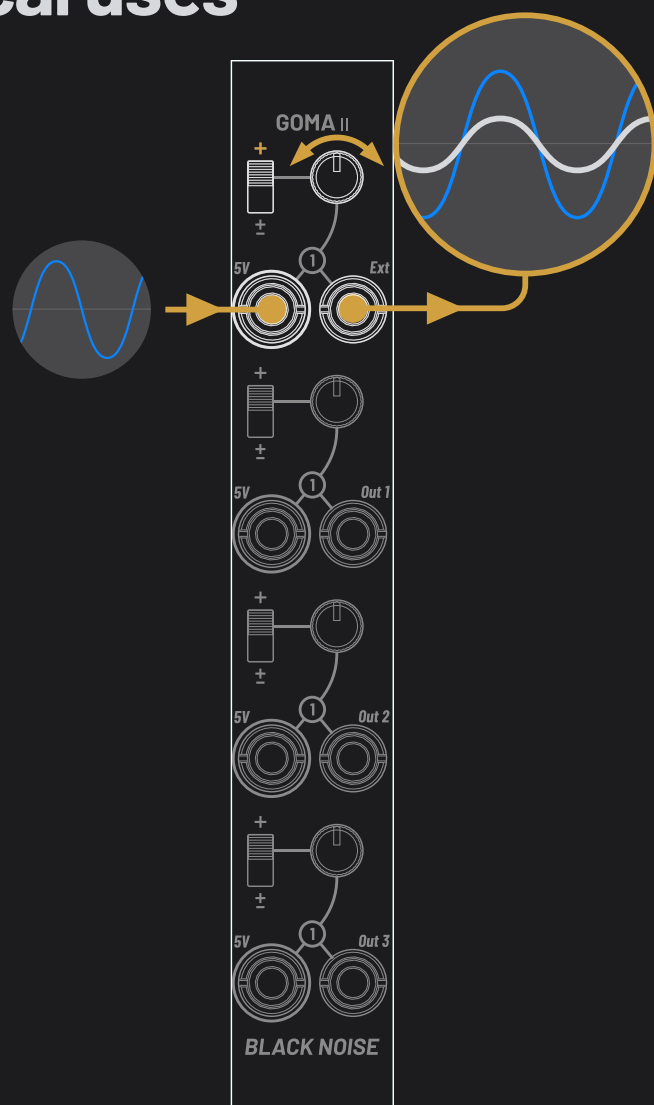
If the last channel of the first module is unpatched, it is mixed with the first channel of the next module's output.



any GOMA
module
(I, II, Pro, ...)



Practical uses



Attenuator

Adjust the gain of an audio signal (volume knob), or set the range of a CV signal before sending it to a modulation input.

Process a signal with the polarizer switch to unipolar.

Use the knob to set the desired amplitude.

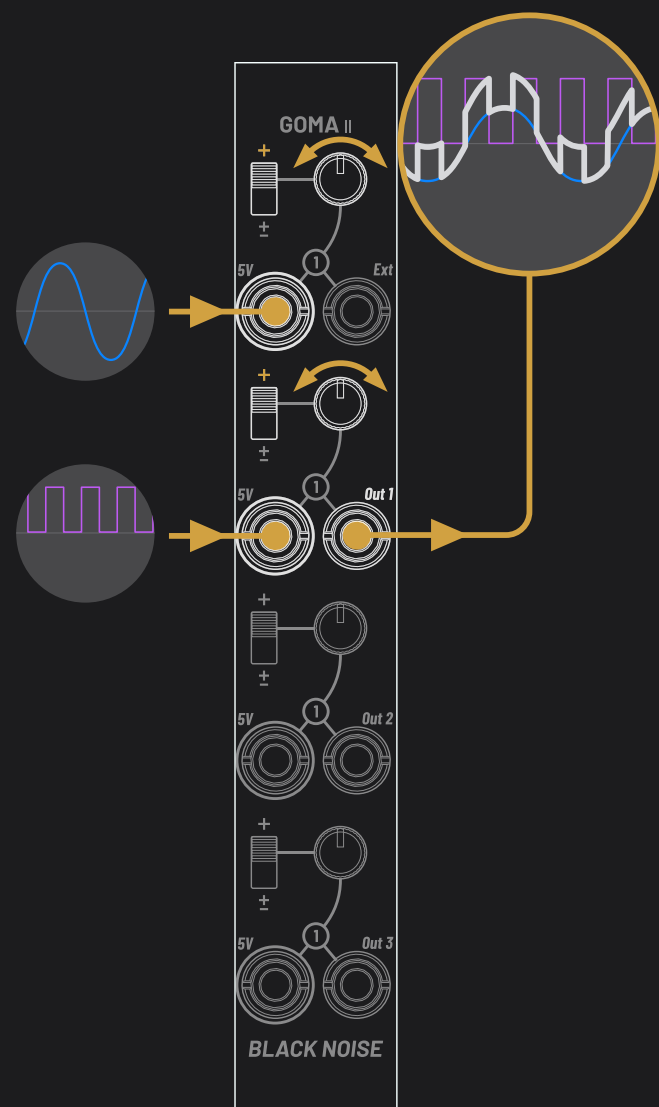
Attenuverter

Turn a LFO ramp waveform upside down, prepare an audio signal for phase effect or invert the direction of an envelope before sending it to a modulation input.

Process a signal with the polarizer switch to bipolar.

Use the knob in counter-clockwise direction to set the desired amplitude of the inverted signal.



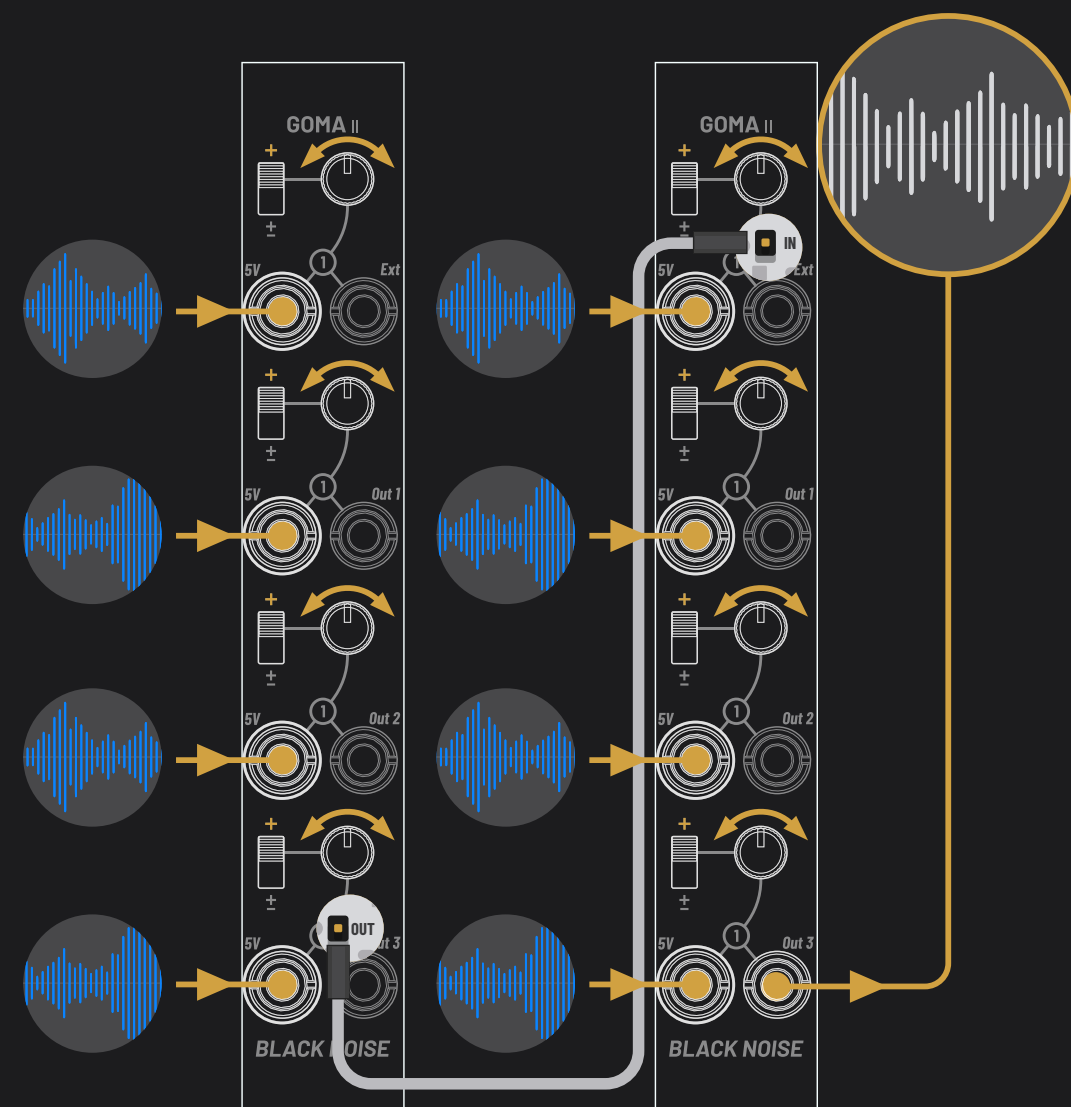


Mixer

Mix audio signals, create complex modulation signal by combining LFO shapes.

Patch two or more inputs. patch the lowest used channel output only and leave all other outputs unpatched.

Use the knobs to adjust the level of each channel in the mix.



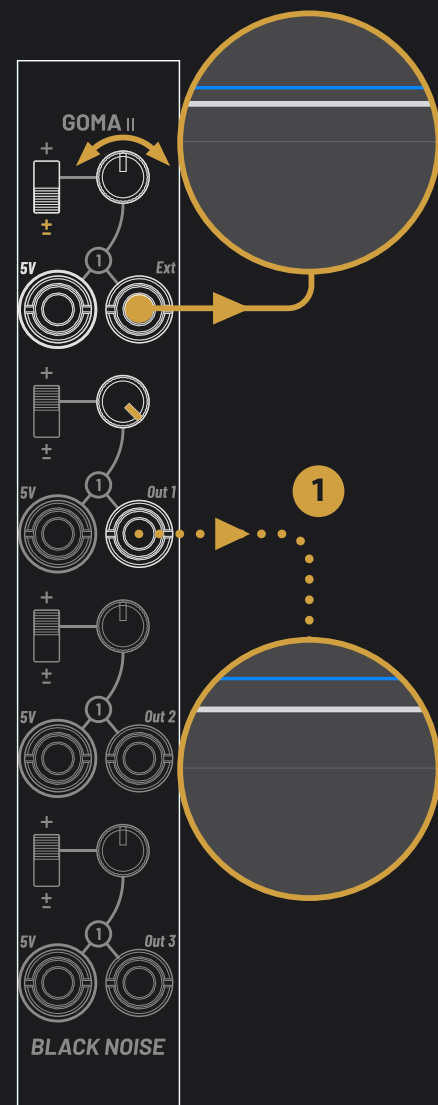
Daisy chain mixer

Extend the cascade mixing system through any module from the GOMA family.

Ensure the modules are daisy chained as shown in p6.

Patch any number of inputs. Patch solely the last used channel output in the chain of modules.

Use the knobs to adjust the level of each channel in the mix.



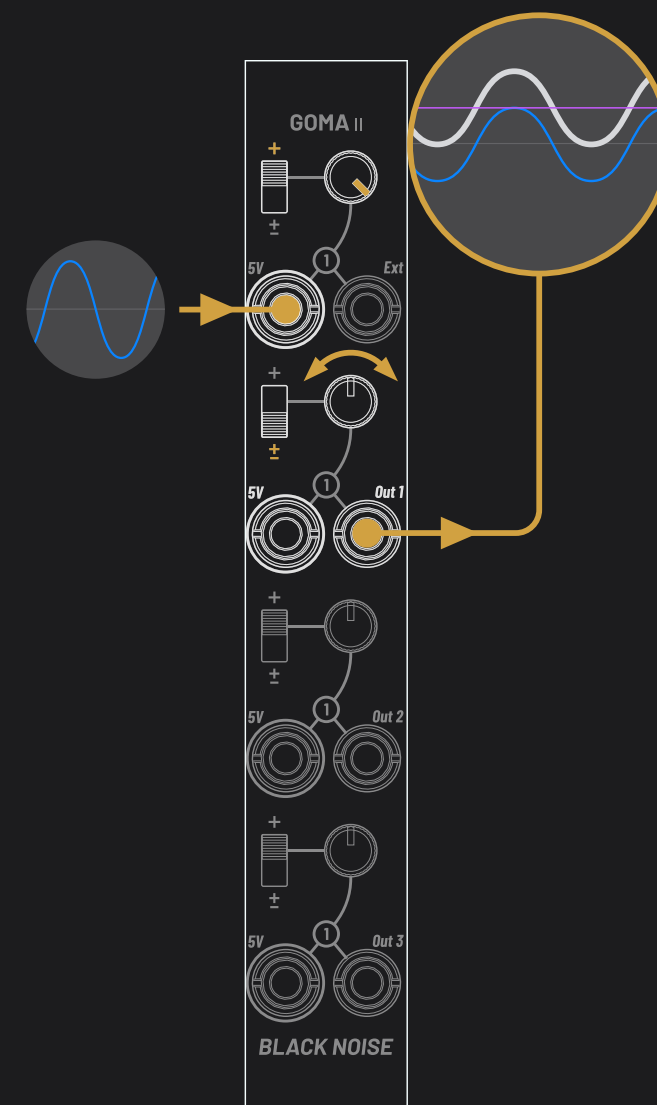
Fixed voltage

Set a knob to control any modulation input over a -5V to +5V range.

Use a channel without input connected to enable the 5V normalization.

The bipolar switch allows the knob to shift the fixed voltage from -5V to +5V.

1. With a +5V offset, the active range can be transposed from 0 to +10V.



Offset

Bring a unipolar LFO in the bipolar range and vice versa, prepare audio signal for asymmetric wave shaping, transpose a 1V/oct sequence.

Combine an external signal (output unpatched) with an offset (input unpatched).

+5V to bring a bipolar signal in the positive range, -5V to bring a unipolar signal in the bipolar range.