

MAKE NOISE

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# LIMITED WARRANTY

Make Noise warrants this product to be free of defects in materials or construction for a period of one year from the date of purchase (proof of purchase/invoice required).

Malfunction resulting from wrong power supply voltages, backwards or reversed eurorack bus board cable connection, abuse of the product, removing knobs, changing faceplates, or any other causes determined by Make Noise to be the fault of the user are not covered by this warranty, and normal service rates will apply.

During the warranty period, any defective products will be repaired or replaced, at the option of Make Noise, on a return-to-Make Noise basis with the customer paying the transit cost to Make Noise.

Make Noise implies and accepts no responsibility for harm to person or apparatus caused through operation of this product.

Please contact [technical@makenoisemusic.com](mailto:technical@makenoisemusic.com) with any questions, Return To Manufacturer Authorization, or any needs & comments.

<http://www.makenoisemusic.com>



About This Manual:

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Special thanks to Shawn Cleary, Kelly Kelbel, Josh Kay, Aaron A., Devin Booze, Mike Johnson, and Megan Bailey.



# INSTALLATION

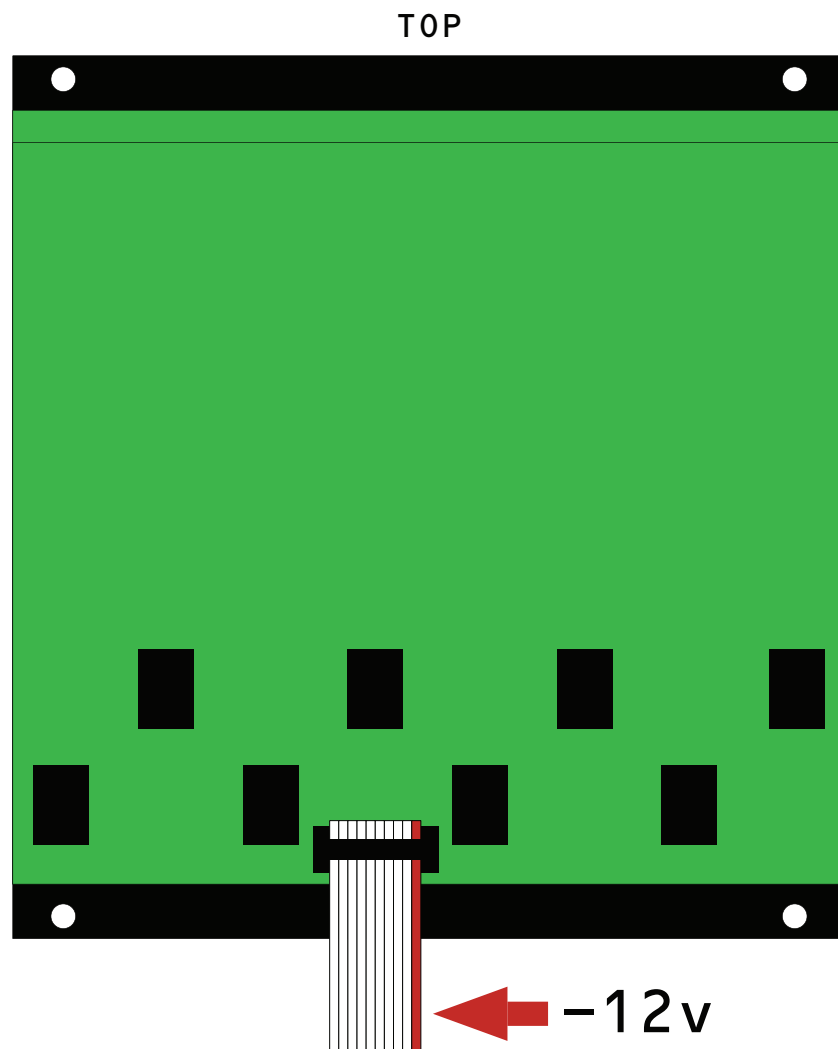
## Electrocution hazard!

Always turn the Eurorack case off and unplug the power cord before plugging or unplugging any Eurorack bus board connection cable. Do not touch any electrical terminals when attaching any Eurorack bus board cable.

The Make Noise QMMG is an electronic music module requiring 65mA of +/-12V regulated voltage and a properly formatted distribution receptacle to operate. It must be properly installed into a Eurorack format modular synthesizer system case.

Go to <http://www.makenoisemusic.com/> for examples of Eurorack Systems and Cases.

To install, find necessary space in your Eurorack synthesizer case, confirm proper installation of Eurorack bus board connector cable on backside of module (see picture below), plug the bus board connector cable into the Eurorack style bus board, minding the polarity so that the RED stripe on the cable is oriented to the NEGATIVE 12 Volt line on both the module and the bus board. On the Make Noise 6U or 3U Busboard, the negative 12 Volt line is indicated by the white stripe.



Please refer to your case manufacturer's specification for location of the negative supply.



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# OVERVIEW

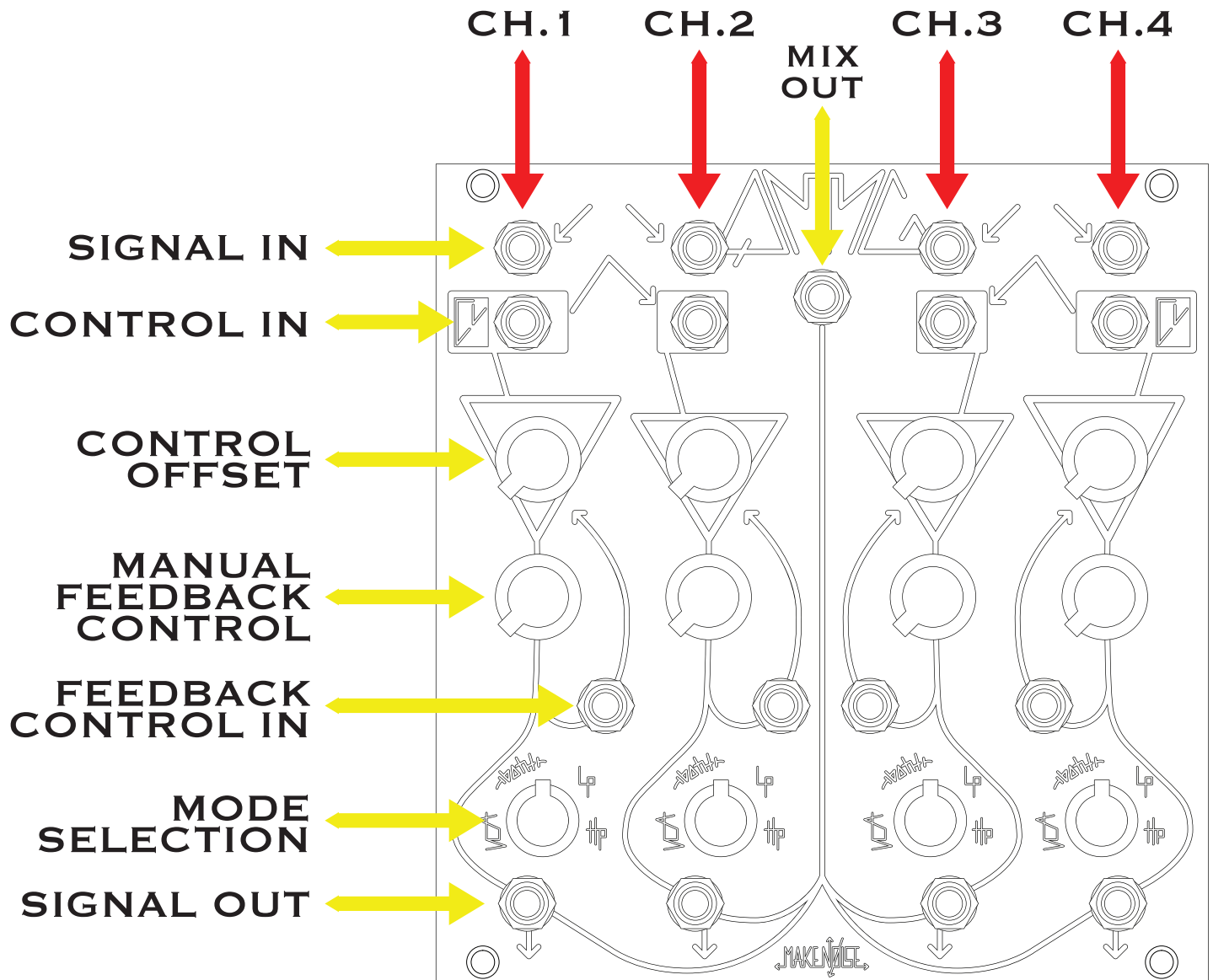
The Quad Multi-Mode Gate is a huge riff on the original Buchla 292 Quad Lo-Pass Gate, including a Mix Out and all of the original feature set. The QMMG offers additionally: HiPass mode, Voltage Controlled Feedback, Direct Coupling and Normalizations so that multiple channels may easily be used together to create Bandpass Gates, steeper HP, BP or LP Filters or even something like a traditional Synthesizer Voice Architecture.

The QMMG contains no fewer than 8 Vactrols!

The 2018/2024 black and gold reissue of the QMMG is functionally identical to the original. The Top board was re-engineered to use analog pots for mode selection instead of analog switches. The only change to the bottom board is the addition of reverse power protection. The signal path and circuit have not changed.



# PANEL CONTROLS



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# PANEL CONTROLS, CONT.

The QMMG is comprised of 4 identical channels each having the following:

## **SIGNAL IN**

Direct Coupled signal input capable of accepting audio or control signals. CH. 2 Signal IN is normalized to CH.1 Signal OUT. CH.3 Signal IN is normalized to CH.4 Signal OUT.

## **CONTROL IN**

Direct coupled, highly sensitive control signal input for the corresponding channel's gate. Responds to positive signals by adding to the Control Offset, and to negative signals by subtracting from the Offset. CH.2 Control IN is normalized to CH.1 Control IN. CH.3 Control IN is Normalized to CH.4 Control IN.

## **CONTROL OFFSET**

Applies an offset voltage to the Gate control. Manually set, ranging From 0 at full CCW to 8V at full CW. Together, Control IN and Control Offset are a sort of combination of the Voltage and manual controls for GAIN on a VCA and CUTOFF on the typical VCF.

## **FEEDBACK MANUAL CONTROL**

Applies feedback to the gate. Ranging from amplitude 0% at full CCW to amplitude 100% at full CW.

## **FEEDBACK CONTROL IN**

corresponding gate. This signal is added to the Feedback Manual Control, and thus allows one to direct coupled control signal input for the amplitude of the feedback applied to the achieve higher feedback amounts than possible with the Manual Control alone.

## **MODE SELECTION**

Operation of the GATE is set by this rotary switch. There are 4 possible settings. The top-most being VCA, followed by BOTH, LP and finally HP.

## **In addition to the four GATE channels, a single MIX OUT is provided**

The sum of all signals processed by the QMMG is output at this socket. A signal is removed from the MIX when a plug is inserted at the corresponding channel Signal OUT.



# THE GATE MODES

## VCA

The GATE operates as a voltage controlled amplifier. The Control Offset and Control Signal Input Provide control of The Amplitude domain. The response to Incoming control signals is non-linear. In this mode the Feedback acts to produce an additional, not-so-linear GAIN of 50%, allowing the user to alleviate the amplitude loss commonly associated with LoPass Gate VCA operation. With Feedback Manual control set at NOON, the signal will appear unattenuated. Gain or Attenuation is achieved by adjusting the Feedback Manual Control.

## BOTH

The Gate will operate simultaneously in the amplitude and frequency domains. As the control signal & control offset Levels become more positive, the Amplitude of the processed signal increases AND the high frequency content of the signal is revealed. As the control & offset signals become less positive, the Amplitude decreases, the High frequencies are attenuated, and low frequencies become more pronounced. Manipulation of the manual control will not display the greatest attributes of this mode. Instead a fast envelope or pulse of greater than +8V will provide Beautiful examples of this mode's ability to produce acoustic like attack & Decay transients. The applied signal will seem to RING & Resonate, not unlike a drum or plucked string. In this mode, The FEEDBACK is routed so as to DAMP the RINGING. It is not unlike applying your hand to the skin of a rum while striking the head or Muting a guitar string with your palm; Increasing the FEEDBACK could be likened to applying greater pressure, further muting, until finally, there is almost no ringing.

In the past it has been common practice to follow the LoPass Gate with a VCA in order to control the RINGING and reduce or eliminate the signal bleed associated with this Mode. The Feedback circuit in the QMMG allows for this control without the use of an Additional VCA. To control the ringing adjust the Feedback Manual Control or apply a control signal to the Feedback Control IN. To stop the signal leakage (when the Gate is closed), add a touch of feedback with the Feedback Manual Control. If further reduction of signal bleed is needed (during quiet passages for example) use 2 gates in series, set to BOTH mode. Normalizations make this possible without additional patching. Applying the signal to Signal IN channel 1 (or 4). Apply the envelope or pulse to Control Signal IN channel 1. Take the output from Signal OUT channel 2 (or 4).

## LP

The GATE operates mostly on the Frequency Domain, becoming a LoPass Filter. The Control Offset, in tandem with the Control Signal IN, acting as "Cutoff" Control. As the Control signal becomes less positive, the High Frequency content becomes further Attenuated. at lower control signal levels the Amplitude Domain is also affected; this, combined with the response of the Vactrols involved, gives this mode a different feel from the typical VCF. Feedback is routed so as to cause a highly unstable, non-linear resonance. The amplitude of Output signal increases greatly with the addition of this resonance, beware the volume.





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# GATE MODES, CONT.

## HP

The GATE operates mostly on the Frequency Domain, becoming a HiPass Filter. The Control Offset, in tandem with the Control Signal IN, acting as “Cutoff” Control. As the Control signal becomes more positive, the Low Frequency content becomes further attenuated. at the highest control signal levels the Amplitude Domain is also affected; this, combined with the response of the Vactrols involved, gives this mode a different feel then the typical VCF.

Feedback is routed so as to cause a highly unstable, non-linear resonance. The amplitude of Output signal increases greatly with the addition of this resonance, beware the volume.

## NORMALIZATIONS

Throughout the QMMG normalizations have been installed to allow for ease in patching Combinations that result in BANDPASS Gates, Steeper LP and/ or HP Gates or even Something like a traditional Subtractive Synthesis Voice.

**CH. 2 Signal IN is normalized to CH. 1 Signal OUT.**

**CH. 2 Control IN is normalized to CH. 1 Control IN.**

**CH. 3 Signal IN is normalized to CH. 4 Signal OUT.**

**CH. 3 Control IN is Normalized to CH. 4 Control IN.**

Additionally, all **Signal OUTs are normalized to the MIX OUT.**

Inserting a plug at any Signal OUT will remove the Corresponding signal from the mix.



# TIPS AND TRICKS

- Use one half of the QMMG to process CV (attenuate, amplify, mix, smooth) to be applied to the other half for processing of Audio signals.
- VCA mode is useful for utilizing the QMMG as a Voltage Controlled Mixer, or processing Control signals.
- To facilitate the creation of certain sounds, the control inputs are very sensitive. To achieve subtle modulations, attenuate the incoming control signal before applying to the QMMG. Because it is Direct Coupled, a channel of the QMMG could be used for attenuation.
- BOTH mode responds best to very fast envelopes, pulses or really short Gates signals.
- To create a Bandpass Gate, apply the audio signal to CH. 1 Signal IN, control signal to CH.1 Control IN. Set CH. 1 to HP and CH. 2 to BOTH. Take your output from Signal OUT CH. 2. Adjust The Control OFFSET for CH. 2 to full CCW, set CH. 2 Feedback Manual Control for the desired amount of ringing. Adjust the Control OFFSET and Feedback Manual Control for CH.1 to taste. A Bandpass Filter is created by setting CH. 2 to LP mode, feedback will then add further resonance to the signal.
- In VCA or BOTH mode, the VC Feedback may act as an ACCENT control if utilizing the QMMG in A sequencing patch. Applying an Accent GATE/ signal to the FEEDBACK Control IN will cause That step to become LOUDER and in the case of BOTH Mode, to have lees ringing as well.
- the QMMG presents the possibility of very creative Filters to be patched by combining 2 or more channels. The normalizations allow for this to be done with ease. Control of the Individual Cutoff and Resonances per channel make multiple Resonant Peaks, each modulated By a different control signal and with different amplitudes, also under individual voltage Control, a possibility! Try creating a Bandpass filter, with the HP and LP elements modulated by DIFFERENT LFOs.
- When combining multiple channels for creating complex filters, try taking your audio out from The MIX OUT as opposed to the individual channel out. This will present you with multiple taps from the Filter network you have created. For example, in a BandPass filter patch, the sum of the HiPassed and the BandPassed signal would appear at the MIX OUT.
- Mult your Audio Signal, and apply it to 2 or more channels of the QMMG, with different modes Selected. Take the MIX OUT. Manipulate each channel with different Control sources and amounts for Offset & Feedback. This will create a very complex sound from a SINGLE sound source.



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# PATCH IDEAS

## QMMG Panning

- Send the same audio to 2 different channels.
- Set those channels to LPF and HPF respectively.
- Set cutoff for both fully CCW (resonance at CCW).
- Patch individual outs from those channels to Left and Right monitors respectively.
- Patch the same modulation to both channels—modulation at max will mean the signal is present at the LPF channel, modulation at min will mean the signal is present at the HPF channel.

## MMG Mode Selector

- Patch the same signal to 2 different channels of QMMG.
- Set those channels to LPF and HPF respectively (ideally w/ similar Q settings).
- Patch the direct outs of those 2 channels to the A and B inputs on the crossfade channel of either a CH.SVR or X-Pan.
- Monitor the output of CH.SVR/X-Pan.
- Use the crossfader position to select the filter type.

## QMMG Paraphony

- Patch audio signal 1 to QMMG channel 1 (LPG mode).
- Patch audio signal 2 to QMMG channel 2 (LPG mode).

Control each LPG with its own CV, or patch one CV signal to QMMG channel 1 CV in.

- Patch QMMG Mix Out to QMMG channel 4 signal in (set to LPF mode).
- Set or modulate the cutoff frequency and resonance to taste.

Monitor the output of QMMG channel 4.

*Extended version: patch QMMG channel 4 out to QMMG channel 3 signal in (set to VCA mode) and modulate to taste for post-filter amplitude control.*

