MAKE NØISE
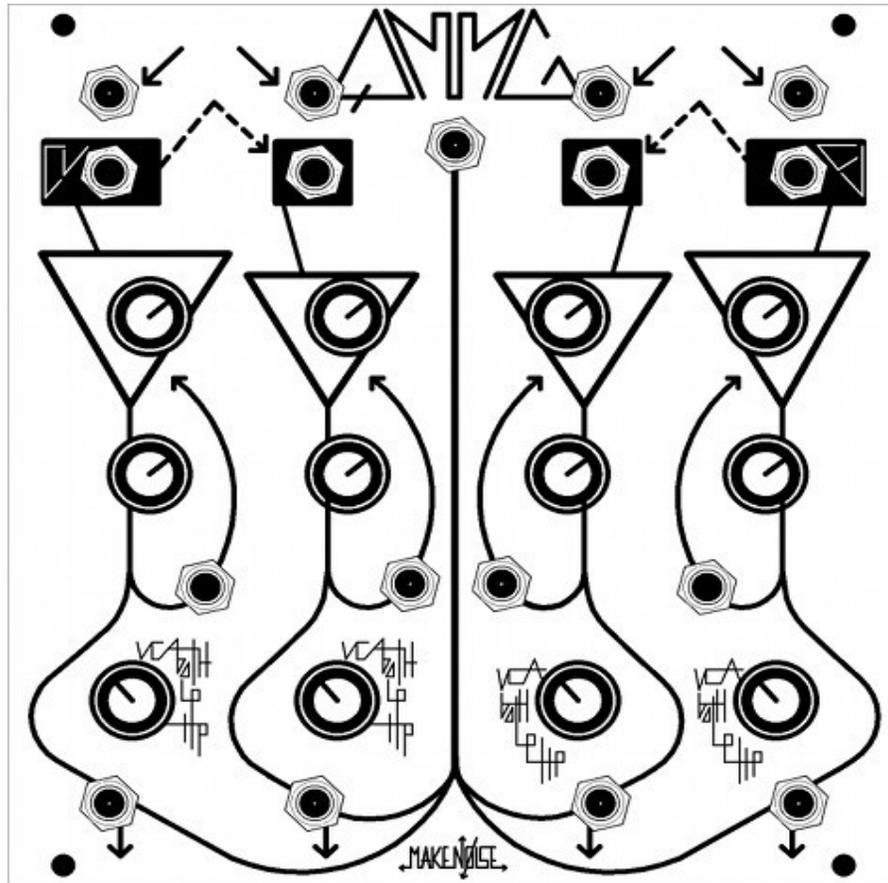

Quad Multi-Mode Gate

Introduction:

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
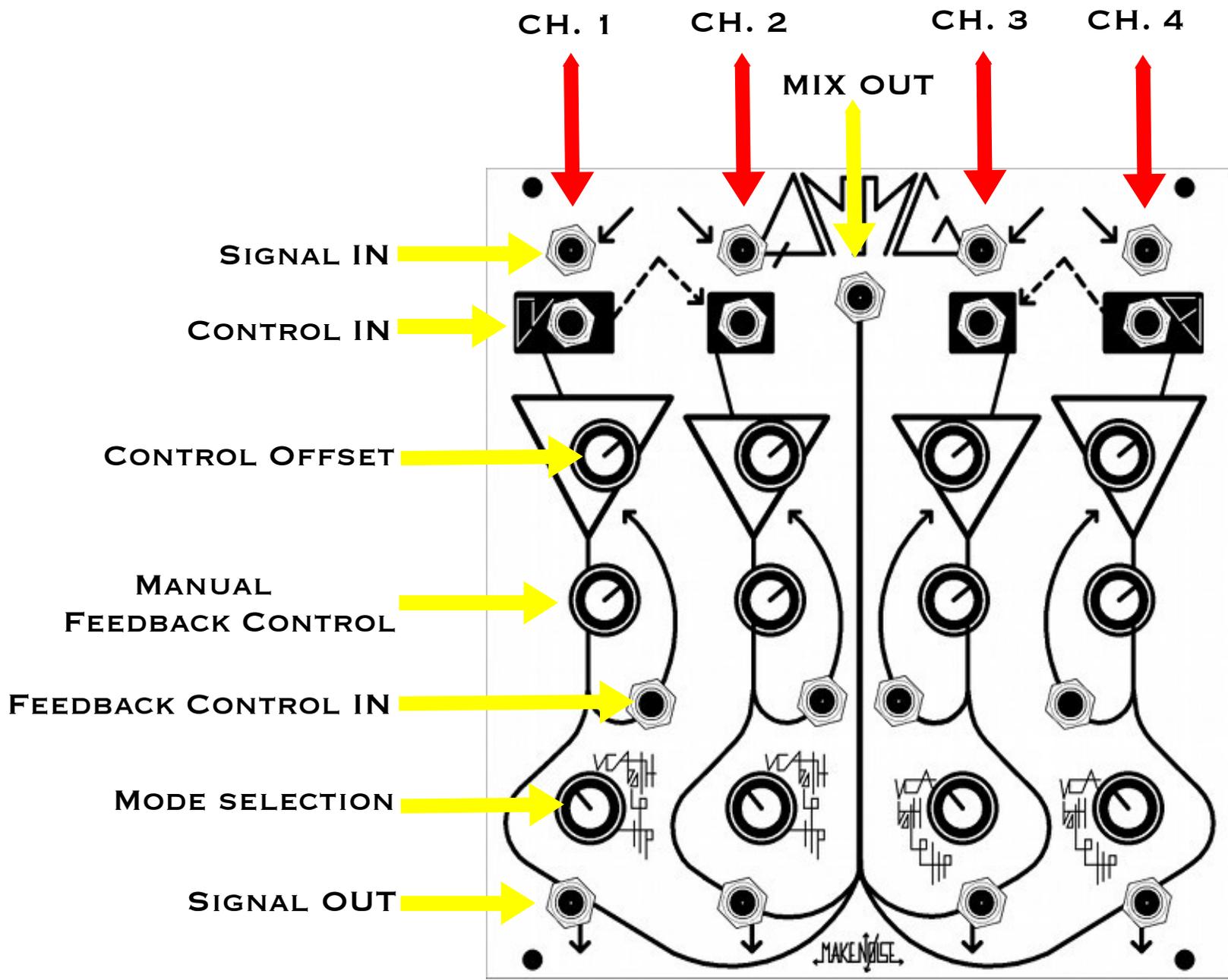a traditional Synthesizer Voice Architecture.
The QMMG contains no fewer than 8 Vactrols!

Extra special thanx go out to Shawn Cleary, Kelly Kelbel, Josh Kay, &
Aaron A. for support In the development of the QMMG.

Installation:

The Make Noise Quad Multi-Mode Gate is an analog electronic
signal processor requiring 60mA of +/-12V regulated power and
properly formatted distribution receptacle to operate.
It is designed to be used within the euro format modular synthesizer system.
Go to http://www.doepfer.de/a100_man/a100t_e.htm
for the details of this format.

To install, clear 24HP of space in your euro-rack modular synthesizer system,
plug the 16pin power cable into the euro-rack style power distribution board,
minding the polarity so that
the RED stripe on the cable is oriented to the NEGATIVE12 volt supply line.
This is USUALLY at the bottom.
Please refer to your case manufacturers' specifications
for location of the negative supply.

CH. 1   CH. 2   MIX OUT   CH. 3   CH. 4

SIGNAL IN

CONTROL IN

CONTROL OFFSET

MANUAL
FEEDBACK CONTROL

FEEDBACK CONTROL IN

MODE SELECTION

SIGNAL OUT

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
Direct coupled control signal input for the amplitude of the feedback applied to the corresponding gate. This signal is added to the Feedback Manual Control, and thus allows One to 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.

Signal OUT
Output of the signal applied to the input, as processed by the GATE.
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In addition to the 4 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, But 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 drum 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 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.

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 S**ignal OUTs are normalized to the MIX OUT**.
Inserting a plug at any Signal OUT, will remove the Corresponding signal from
the mix.

Tips, 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.

Apply solder to bridge for 10x attenuation of MIX OUT.
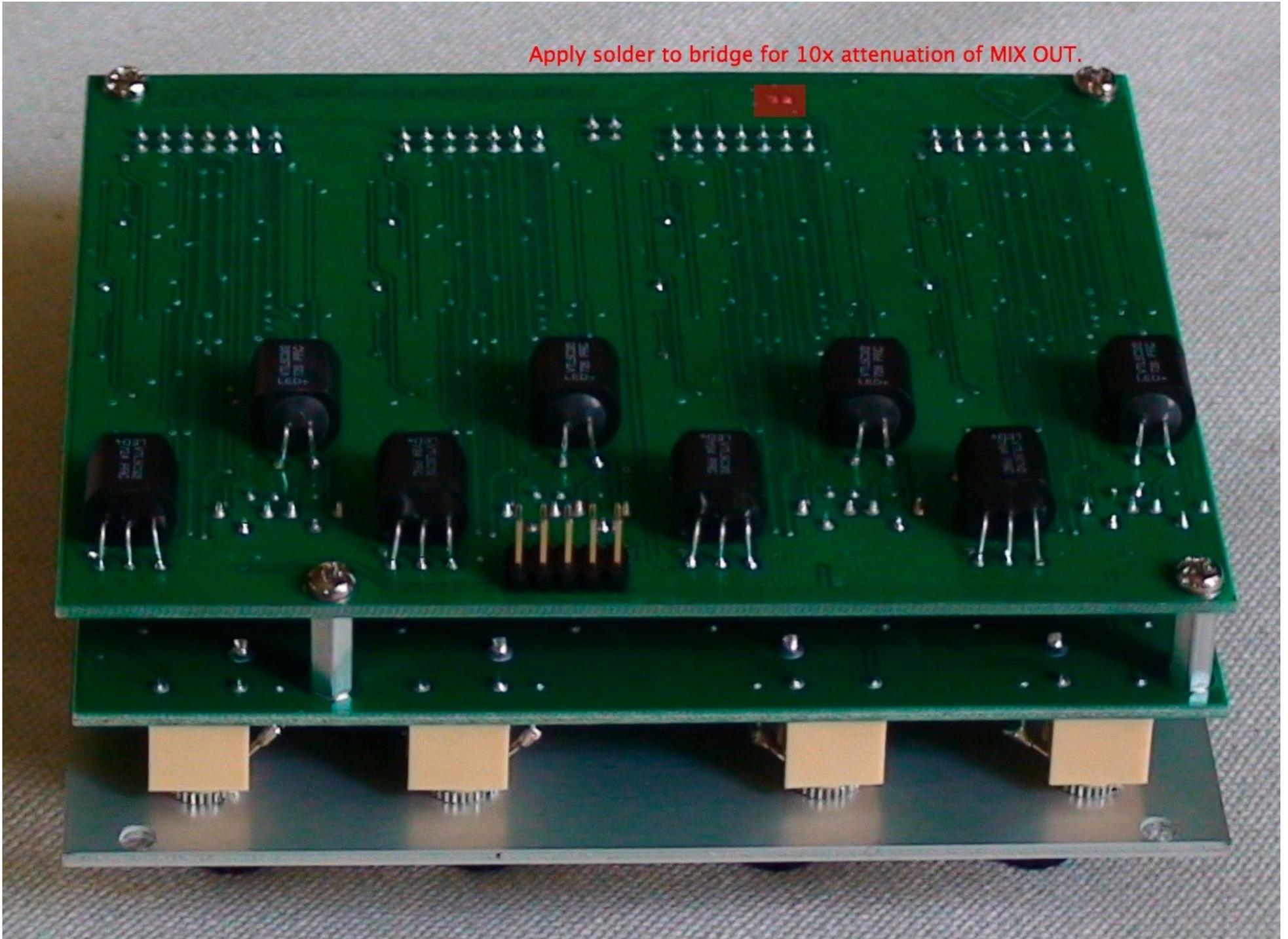
Limited WARRANTY:

Make Noise warrants this product to be free of defects in materials Or Construction for a period of two Years from the date of manufacture.

Malfunction resulting from wrong power supply voltages, backwards power cable connection, abuse of the product 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. Please contact Make Noise for Return To Manufacturer Authorization.

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

Please contact tony@makenoisemusic.com with any questions, needs & comments... otherwise go MAKE NOISE.

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