

**GMS-714 QUAD VOLTAGE CONTROLLED
AMPLIFIER**

**PRELIMINARY OPERATION MANUAL
01/29/2019**

GROVE AUDIO®

**COPYRIGHT 2019 – GROVE AUDIO LLC
ALL RIGHTS RESERVED**

Features

- 4 high quality voltage controlled amplifiers
- Linear or logarithmic response switch selectable on each channel
- Control voltage input routed through a reversible attenuator
- Internal signal routing and switching allows pairs of amplifiers to be used as a stereo panner
- Internal mixer can produce a monaural mix of all four channels or a stereo mix of channel pairs



Basic Operation

VCA Channel

When the control voltage attenuator knob for a channel is pushed in, the amplifier gain response to the control voltage signal varies in a linear fashion with respect to the control voltage signal. When the control voltage attenuator knob is pulled out, the amplifier gain response will vary in a logarithmic fashion with the control voltage signal. The gain will be approximately X1 with a 5 Volt input and will have a positive value for voltage inputs greater than 5 Volts.

Plug an input signal into the channel input connector. With no control signal inserted at the control input, 5 VDC is normalled through the control input jack and fed to the input of the reversible control voltage attenuator. Varying the control position between 0 and 5 will allow the input signal to appear on the output jack for the corresponding channel. The signal gain will vary from $-\infty$ to approximately X1 at the 5 position.

When a control voltage signal is applied to the control input of a channel, the reversible attenuator will act as a variable gain control with approximately the range of $-X1$ at -5 , $X0$ at 0 , and $X1$ at $+5$.

Internal Mixer

The internal mixer is configured with VCA channels 1 & 3 permanently assigned to the left channel (marked "MIXED 1 3") and VCA channels 2 & 4 permanently assigned to the right channel (marked "MIXED (13)24"). If no connector is inserted in the left mixer jack, all channels are mixed and fed to the right output jack allowing a monaural mix of all four channels.

Panning Function

Pairs of channels can be used to provide a stereo panning function. Channels 1 & 2 form one pair and channels 3 & 4 form the other pair. Audio applied to the first (odd) channel in each pair is internally normalized to each input of the pair.

To set up for panning operation, place the PAN button for the channel pair in the ON position. Rotate the odd numbered control attenuator to the +5 position. Rotate the even numbered control attenuator to the -5 position. Push both attenuator knobs in for linear operation. Apply a bipolar panning signal to the control input of the odd numbered channel of the pair. The control signal will be processed internally and applied to the even numbered channels control input to achieve the panning effect.

For a panning control signal that varies between -5 Volts and +5 Volts, the input signal applied to the odd numbered channel audio input (also internally normalized to the even numbered channel of the pair) should vary smoothly between the odd numbered channel (left) and the even numbered channel (right) outputs. When using the mixer outputs, the signal should vary between the MIXED 1 3, or "left", channel output and the MIXED (13)24, or "right", channel output.

If the control signal level goes above the values specified, then the signal will appear to approach the listener in that channel because the amplifier is actually adding gain only to the corresponding channel above a value of X1.

Mixer Routing Jumpers

Jumpers are provided internally that allow the selection of the source of the signal routed to the mixer inputs from each VCA channel. One position of the jumper selects the signal before the output connector and the other position selects the signal after the output connector. The effect of having the jumper in the second (or "POST") position is that inserting a connector removes the corresponding amplifier's output from the mixer.

Mixer Interconnect

There is a six pin connector that allows multiple GMS-714 module's mixers to be coupled together to form a mixes with more than four input sources.

Internal Gate Inputs

There is an internal gate input connector for each channel that will accept a 0 to +5 Volt signal that is added to the output of CV reversible attenuator before the gain control signal is applied to the VCA. This input can have various uses including gating the audio on and off for the corresponding channel or applying an initial gain control signal.

