

**GMS-784 QUAD LFO/VCA**  
**PRELIMINARY OPERATION MANUAL**  
**June 17, 2021 – Rev. 1**

**Copyright 2021 - Grove Audio®**

**All Rights Reserved**



## INTRODUCTION

The GMS-784 Quad Voltage Controlled Low Frequency Oscillator/VCA Amplifier provides low frequency triangle, sine or square waves for use as modifiers or triggers for complex evolving synth patches. Two functions, commonly used together are combined in each channel to produce a versatile voltage controlled waveform generator. The LFO has a wide range from subsonic to low audio in three ranges and provides a trigger function to reset the oscillator to a known state. The voltage controlled amplifier has a selector switch allowing one of the three oscillator waveforms to be selected as its input. The switch has a fourth position that allows selection of a front panel input to be routed to the VCA. The VCA can then be used completely independently of the LFO. The output of the VCA is a function of the front panel level control summed with the voltage control input.

## BASIC FUNCTIONS

- Generate
- Scale
- Wave Shape

**OSCILLATOR-** Oscillator frequency is set by a variable potentiometer and a range toggle switch. If the frequency control voltage input is used, the final frequency control voltage value is a combination of the voltage value at the control input and the position of the frequency control. The control voltage affects the oscillator frequency causing a change of approximately one octave per volt of change.

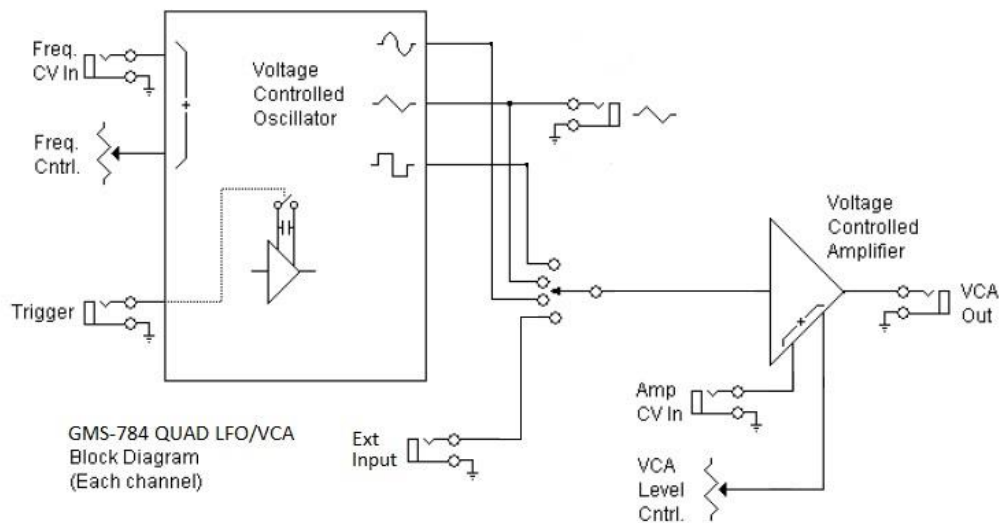
The direct triangle wave output of the oscillator is available on a front panel jack. The sine, triangle and square waveforms are also supplied to a panel rotary switch that selects which oscillator output is

to be sent to the voltage controlled amplifier signal input. Each oscillator has a bi-polar LED to give a visual indication of the oscillator frequency.

**TRIGGER-** When a control signal with a rising edge is presented to the Trigger input, the oscillator is reset to 0 Volts output and the waveform starts rising in the positive direction. The trigger input signal should be a 0 to +5 Volt signal. The length of the trigger pulse is not important. A continuous +5 Volt signal on the trigger input will hold the oscillator in reset. When the trigger input causes a reset of the oscillator waveform, the oscillator output will be reset to 0 Volts and if the trigger signal is released, the oscillator output voltage will start the output signal on the positive phase.

**AMPLIFIER-** The internal voltage controlled amplifier in each oscillator section allows the waveform selected on the WAVE selector switch to be modulated by an external control voltage input. At a control input of 5 Volts the amplifier produces a gain of X1. The input voltage range of the control voltage is 0-10 V so the approximately 10 V PP output of the oscillator can be raised to as much as 20 V PP at the VCA output.

### BLOCK DIAGRAM



## TECHNICAL SPECIFICATIONS - GMS-784

Frequency Range – High Range	0.015Hz to 400Hz
Frequency Range - Low Range	0.0015Hz to 10Hz
Frequency Range – Ultra Low Range	0.00015Hz to 1.0Hz
Waveform Voltage Range	10 Volts Peak-to-Peak
Frequency Control Voltage Standard	Exponential 1 Volt per Octave
Amplitude Control Voltage Standard	Linear 1.0 V per Volt
Envelope Control Voltage Range	0 - 5 Volts
Gate Control Voltage Range	0 - 5 Volts (1.8 Volt Threshold)
Typical Input Impedance	100K Ohms
Typical Output Impedance	1K Ohms (short circuit protection)
Module Power	+15 Volts 50 mA., -15 Volts 50 mA.
Module Size	Panel height - 8.75 inches (222 mm); Panel width - 4.25 inches (108 mm); Depth (behind panel) 2.1 inches (53 mm)