

GMS-302 Dual Precision Voltage

Controlled Oscillator

PRELIMINARY OPERATION MANUAL

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Grove Audio LLC

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INTRODUCTION

The GMS-302 Dual VCO contains two full-function voltage controlled oscillators in a 2MU or 4 ¼ inch Moog compatible module. Each oscillator supplies a number of simultaneous waveform outputs as well as a Wave output that allows selecting one of five waveforms to be sent to a separate output jack. The Wave output also includes a voltage controlled amplifier to scale the output waveform under external voltage control.

Each core is built on a temperature compensated triangle wave oscillator that includes an exponential current converter to implement standard 1 volt per octave control over the output frequency. The oscillator will track a control voltage range of 10 octaves permitting frequency control over the entire audio range from sub-audible to almost 20kHz.

Three modulation options are provided, linear and exponential FM modulation and a pulse output with pulse width modulation. Panel attenuators allow the amount of modulation to be controlled.

FREQUENCY CONTROLS

A variable frequency control and a calibrated range switch are included to set the initial frequency that is produced when no external modulation is applied. The calibrated range switch allows the initial frequency to be set to one of five possible octave base frequencies. The range switch includes an LFO position that permits generating very slow waveforms for modulation tasks. The variable frequency control offers a range of plus or

minus two octaves.

FM MODULATION INPUTS

Linear and Exponential FM modulation inputs, in addition to the 1V/Octave input are provided. There is an attenuator to control the depth of modulation that occurs. The linear FM input has switch selectable AC or DC coupling that simplifies using the input when doing FM synthesis.

PULSE WIDTH MODULATION INPUTS

A variable pulse width control sets the initial duty cycle of the pulse output wave. Center position of the control will produce a 50% duty cycle. The range of the control varies from 0 to 100%. The initial duty cycle can be varied by applying a modulation input to the PWM input. The input voltage can be scaled using a panel attenuverter control. The modulation input voltage can be either an AC or DC signal.

OSCILLATOR EXTERNAL SYNC INPUTS

Each oscillator includes an external sync input. A panel switch determines the type of synchronization that will occur. The three position switch selects hard sync, soft sync or no external sync. Hard sync resets the current waveform immediately to zero. This type of sync can be used to keep multiple oscillators in phase or for resetting long period waveforms to a known starting point. Soft sync resets the oscillator to zero if the oscillator is within a certain range of starting the next cycle normally. This type of sync is good for locking oscillators that are running at octave multiples.

SIMULTANEOUS WAVEFORM OUTPUTS

Four waveforms are continuously available on the panel. These are the SINE wave, the TRIangle wave, the SAWtooth wave, and the PULSE wave.

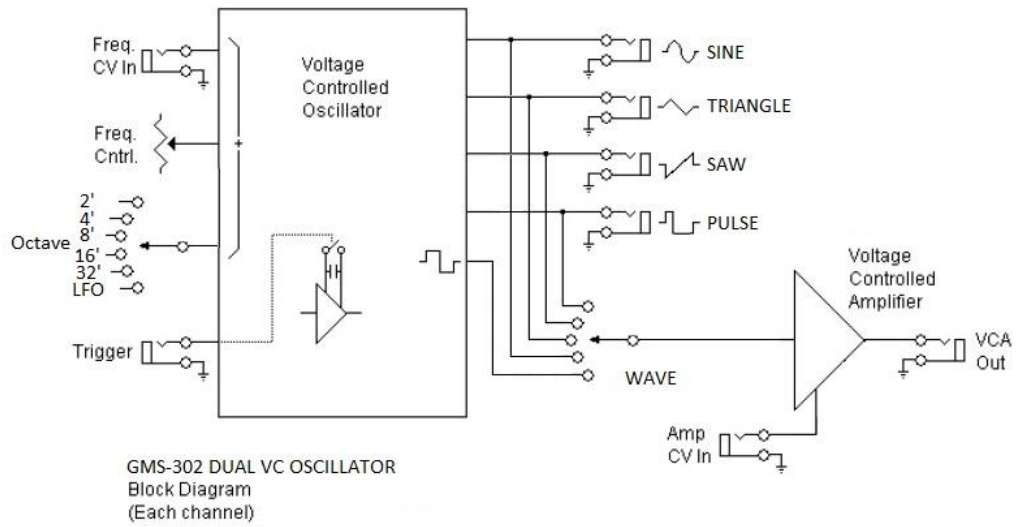
WAVE OUTPUT

The WAVE output has a selector switch that routes one of five waveforms, SINE, TRI, SQUARE, SAW or PULSE to the input of an internal voltage controlled amplifier. The output of the amplifier appears on the WAVE output. The amplifier has a linear control function so applying a 0 to 5 Volt control voltage to the AMP CV input will vary the output waveform from 0 to approximately 5 Volts peak to peak. Going beyond 5 Volts will actually amplify the waveform up to about twice the normal output level.

GENERAL INFORMATION

The compact thin profile of the oscillator allows use in shallow mounting racks and having two oscillators contained within one module permits reducing the size of multiple oscillator instruments. Four full function oscillators will fit in the space normally occupied by two conventional oscillators allowing for more complex patches.

BASIC FUNCTIONS



TECHNICAL SPECIFICATIONS GMS-302

Each Channel

Voltage Scale	1 Volt/Octave - .0833 Volts/Semitone Note number 0 - 127 produces -4.0 V to +6.0 V
MIDI Note Range	0 V = MIDI Note #48 = C4 (starting note for zero volts is presettable)
D/A Converter Output	16 Bits; full-scale range +-10 V
Gate/Trigger Output	0 - +5 V Gate width: duration of note Trigger width: 25 msec.
Module Power	+15 Volts 25 mA., -15 Volts 25 mA., +5 Volts 100 mA

Module Size

Panel height - 8.75 inches (222 mm); Panel width – 4.25 inches (108 mm); Depth (behind panel) 2.0 inches (51 mm)

GMS-302 CALIBRATION ADJUSTMENTS

