

GMS-294A 4 POLE LOW PASS FILTER

PRELIMINARY OPERATION MANUAL

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Grove Audio LLC

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INTRODUCTION

A transistor ladder made with vintage transistors gives the same sonic character to the GMS-294A Four Pole Low Pass filter recreation that the original 904A Four Pole Low Pass filter possesses.

A rotary switch selects the frequency range and a panel fine tune potentiometer allows setting the exact filter frequency. Gain controls are provided for the audio input and the frequency voltage control inputs.

A resonance control on the panel will produce a variable peak at the filter corner frequency. If the control is increased to within approximately 20 % of the maximum, the filter will begin to oscillate with a fairly pure sine wave. The frequency of the oscillation can be controlled by the 1V/Octave and the exponential FM control voltage inputs.

The MU version is housed in a 1MU (2.125 inch wide by 8.75 inch high) panel with DOTCOM compatible power connector.

The original 904a filter input amplitude before clipping was 7 Volts peak to peak. Incorporating an audio attenuator on the input of the filter allows the accommodation of the somewhat higher signal levels found in modern synthesizers without clipping the output waveform. It also permits overdriving the input when that effect is desired.

The resonance control feeds back some of the output signal of the filter in phase with the input signal. This causes a resonance peak to occur at the filter cutoff frequency. The resonance control on this filter, as in the original, causes the signal below the cutoff frequency to be attenuated. While the peak value of the signal rises somewhat, the overall effect of the resonance at the cutoff is enhanced by the reduction in amplitude of other frequencies. This gives almost a bandpass effect at high resonances.

Technical Specifications

Filter topology	4 pole low pass transistor ladder filter 24dB per octave overall
Low Frequency Range	1Hz - 5KHz
Medium Frequency Range	4Hz - 20KHz
High Frequency Range	16Hz - 50KHz
Typical Input Impedance	100K Ohms
Typical Output Impedance	1K Ohms (short circuit protection)
Frequency control inputs	2 - Input 1 fixed 1V/Octave, Input 2 with attenuator
Module Power	+15 Volts 35 mA. -15 Volts 25 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)

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