M104B High Pass Filter (Moog 904B)

FUNCTION DESCRIPTION

The 104B High Pass Filter is a complete clone of the renowned Moog 904B module. Here is a detailed description of its functions copied from the Archive Moog web site: http://www.moogarchives.com/m904b.htm

The 904B High Pass Filter attenuates input signal frequencies below its nominal cutoff frequency setting. The attenuation below FCV cutoff setting is 24dB/oct. As the fundamental is generally the loudest frequency component of a complex tone, deletion of the lowest frequency range can radically alter the timbre. The FCV cutoff point is raised or lowered in octave per volt control inputs.

The Frequency Range switch sets the overall range of frequencies cobered by the fixed Control Voltage potentiometer. The LOW range encompasses 4hz to 20khz, while the HIGH range shifts 1½ octaves up to 10hz through 50khz.

Musical Application

The voltage Controlled Highpass Filter is most useful for altering the timbre of input signals by deleting the predominance of the fundamental partial in a complex tone. Voltage control of this module often creates a spectral sweep radically different from those associated with acoustic instruments. A thin or 'Tinny' sound often results when using this filter. Low frequency control voltages {10-20hz} can, if their gain is boosted from the nominal fixed level output of the VCOs (M103A), effect a ratling or 'scraping' sound {almost regardless of input signal}. The Highpass Filter with slow control voltage and white noise signal provides the basis for a 'sizzle' cymbal and even snare drum sound which is constantly changing {The efficacy of this patch is dependant upon the amplitude envelope as well}.

The Highpass Filter is useful as a voltage controlled noise gate in combination with an Envelope Follower. Connected to the Lowpass filter in parallel, series, or with the Filter Coupler (M104C), the Highpass Filter helps form band pass and band reject filters.

The printed circuit board

The module uses a 2U Moog style front panel. The PCB is a double side board, 4.25″ X 5.5″, has 4 mounting holes, one on each corner and is mounted on 4 x 4-40 1/4″ ″standoffs. All the parts are through hole types.
Connector P4 is positioned to be adjacents to its dedicated pot.
A front panel 5kB (P4) lin potentiometer is used for Fixed Control Voltage response. Four 4 pins Molex connectors (H2,3,4,5) link the PCB to the 2 positions FREQUENCY RANGE front panel rotary switch.
A small 6 pins Molex connector (H6) is used to link the 104B to both 104A & 104C modules to achive Bandpass or Band Reject functions.

Power is connected by use of a 6 pins 0.156″ Molex type connector.
All the wiring cables are shielded type. 2 shielded conductors for all the pots wiring, and Belden RG-174 coax are used for all the input/output jacks connections.

Adjustments and trimmings:

-Set FIXED CONTOL VOLTAGE front panel pot to ‘-6’ position, FREQUENCY RANGE switch to ‘HIGH’.

- Apply a 1khz 0dB sinewave to the SIGNAL INPUT jack.

-Connect an oscilloscope at output jack.

-Adjust ZERO TRIM trimpot (P1) to obtain no DC offset at signal output jack.

-Connect a 1v/oct source at J4 input control voltage.

-While changing the incoming CV voltages Adjust SCALE trimpot (P2) for 1v/oct. at the output jack.

The M104B (Moog 904B)is now ready for use.

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ELECTRONIC SPECIFICATIONS

POWER CONNECTOR PIN ASSIGNMENTS

1	-15V
2	A GND
3	A GND
4	+15V
5	D GND
6	+5V

Panel Size: Double width 4.240"w x 8.75"h.
Filter control inputs: 3 summed
1v/oct Channel input impedance: 100k +/-1%
Modulation Chan. input impedances: 43k +/-5%
Fixed Cont. Voltage pot response: Lin
Frequency Range Switch:
  Low: 4hz to 20khz
  High: 10hz to 50khz
Signal input impedance: 100kohms +/-5%
Signal output impedance: 100ohms +/-5%

Power:
+15V @ 45mA,
-15V @ 33mA,
+5V @ 0mA.