

Professional Series

Model 5234A

Electronic Frequency Dividing Network

Dual channel

Crossover frequency selectable by plug-in circuit board

12 dB or 18 dB per octave filter slope

Switchable subsonic high-pass functions

THD: 0.01%, 20 Hz-20 kHz

Signal/Noise ratio greater than 90 dB



The 5234A Electronic Frequency Dividing Network is designed for use with studio monitor or sound reinforcement loudspeaker systems to provide a cleaner signal from the power source directly to the individual loudspeakers of the system. By dividing the audio spectrum before power amplification, treble tones are separated from, and unaffected by, bass frequencies. The result is more efficient utilization of available amplifier power. Direct coupling to the loudspeakers also eliminates the insertion loss typical of most passive networks and permits realization of the maximum damping factor available from a given amplifier.

The 5234A, a dual-channel unit, can be used for bi-amplification of two loudspeaker systems or to control both transition points in a tri-amplified system. The latter can be accomplished by utilizing one channel for the lower crossover frequency and the other channel for the high frequency transition.

The 5234A is an electronic crossover network utilizing active filters. It exhibits unity gain in the pass band, provides adequate output to drive any quality amplifier, and operates at extremely low distortion levels at full rated output. A programmable high pass filter removes subsonic energy below the lowest usable speaker frequency.

The crossover frequency is determined by inserting the proper printed circuit card into each channel's circuitry. Cards with filter slopes of 18 dB per octave are available for crossover frequencies of 80 Hz, 500 Hz, and 800 Hz. Cards with filter slopes of 12 dB per octave are available for the following frequencies: 250 Hz, 500 Hz, 800 Hz, 1200 Hz, 5 kHz, and 7 kHz. In addition, cards are available with specific crossover characteristics for the JBL 4343, 4350, 4345, 4355, 4430 and 4435 studio monitors. Blank cards are also available to allow construction of circuitry for other crossover frequencies. The units are shipped with two cards that convert each channel to a unity gain audio distribution amplifier having two identical outputs. Each channel of the 5234A is provided with a continuous level control for high frequency shelving.

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Architectural Specifications

The sound system described herein shall be equipped with separate power amplifiers for low (midrange) and high frequency program material. A dual-channel low-level active network shall be provided to filter program material at the designated crossover point(s). The inputs shall be transformerless, symmetrical and floating. Dual-in-line switching shall provide selectable low frequency equalization and subsonic filtering. The frequency dividing network shall be equipped with separate output buffer amplifiers for low and high frequency program material.

Crossover frequency selection shall be accomplished by internally mounted plug-in circuit modules. Each module shall be designed with the crossover frequency printed in such a position as to be easily read through a window in the front panel of the electronic frequency dividing network. The designated crossover frequency shall be the point at which the slopes of the pass band curves cross and where each is 3 dB down from the average output level. This point shall be within $\pm 10\%$ of the designated frequency. The filter slope shall be 12 dB or 18 dB per octave.

The unmodified frequency response of the dividing network shall be 20 Hz-20 kHz, ± 0.5 dB. Distortion shall be less than 0.03% THD at +18 dB, and 0.01% THD, +18 dBV into a 100 k Ω load. Signal-to-noise ratio shall be greater than 90 dB at rated output, 20 Hz-20 kHz equivalent bandwidth.

Internal provision shall be made for switch selection of parallel monaural low frequency outputs. A high-pass filter with 12 dB per octave slope shall remove subsonic energy below the lowest usable speaker frequency. A dual-in-line switch shall provide the following programmable options for the subsonic filter:

- a. Flat frequency response
- b. 20 Hz high pass filter, 12 dB/octave slope, Q = 0.707 (Butterworth)
- c. 20 Hz high pass filter, 12 dB/octave slope, Q = 2 (6 dB boost @ 20 kHz)
- d. 30 Hz high pass filter, 12 dB/octave slope, Q = 0.54
- e. 30 Hz high pass filter, 12 dB/octave slope, Q = 0.84
- f. 30 Hz high pass filter, 12 dB/octave slope, Q = 2 (6 dB boost @ 30 Hz)
- g. 40 Hz high pass filter, 12 dB/octave slope, Q = 0.707 (Butterworth)
- h. 40 Hz high pass filter, 12 dB/octave slope, Q = 2 (6 dB boost @ 40 Hz)

Isolation between channels shall be greater than 70 dB. The electronic crossover network shall be a JBL 5234A.



Input and output terminals for the 5234A. The dual channels can be utilized for triamplification of a single loudspeaker system by connecting the low frequency output of one channel to the input terminals of the other channel. This allows separate, completely independent adjustment of the midrange and high frequencies.

Specifications

Gain	0 dB in the pass band	
Rated Output	6.2 V (+18 dBV) ¹	
Distortion	0.01% THD, 20 Hz-20 kHz @ +18 dBV into >100 k Ω load	
Frequency Response	± 0.5 dB, 20 Hz-20 kHz	
Crossover Frequency	Selectable by plug-in module, -3 dB crossover point $\pm 10\%$	
Filter Slope	12 dB/octave or 18 dB/octave	
High Pass Filtering	Filter	Level at Filter
	Frequency	Frequency
	20 Hz	-3 dB
	20 Hz	+6 dB
	30 Hz	-5.5 dB
	30 Hz	-1.5 dB
	30 Hz	+6 dB
	40 Hz	-3 dB
	40 Hz	+6 dB
		Filter Q
		0.707
		2
		0.54
		0.84
		2
		0.707
		2
Input Impedance	50 k Ω , symmetrical floating	
Load Impedance	600 Ω or greater	
Output Impedance	50 Ω , unbalanced	
Channel Isolation	>70 dB, 20 Hz-20 kHz	
Signal/Noise Ratio	>90 dB, 20 kHz equivalent bandwidth ²	
Controls	High frequency level Power Supply voltage select	
Connections		
Input	Screw-type terminal strip 6.3 mm ($\frac{1}{4}$ in) phone jacks, three-circuit (tip-ring-sleeve) symmetrical, floating	
Output	Screw-type terminal strip 6.3 mm phone jacks, two-circuit, unbalanced	
Power Requirements	6 W, 100-120/200-240 V AC, 50/60 Hz	
Operating Temperature	5°C (41°F) to 55°C (132°F)	
Dimensions	483 mm x 44 mm x 194 mm deep 19 in x 1 $\frac{1}{4}$ in x 7 $\frac{7}{8}$ in deep	
Net Weight	1.8 kg	4 lb
Shipping Weight	3 kg	6 $\frac{1}{2}$ lb
Crossover Cards (one required per channel)		
18 dB/octave	51-5130—blank 51-5132—500 Hz 51-5133—800 Hz 51-5138—80 Hz 51-5145—For 4345, 4355 studio monitors	
12 dB/octave	52-5120—blank 52-5121—250 Hz 52-5122—500 Hz 52-5123—800 Hz 52-5124—1200 Hz 52-5125—5000 Hz 52-5127—7000 Hz 52-5130—For 4430, 4435 studio monitors 52-5140—For 4343, 4350 studio monitors	

¹0 dBV = 0.775 V rms (1 mW into 600 Ω).

²Requires 20 Hz-20 kHz equivalent bandwidth filter.



Professional Division

JBL Incorporated

8500 Balboa Boulevard, P.O. Box 2200, Northridge, California 91329 U.S.A.

JBL/harman international

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