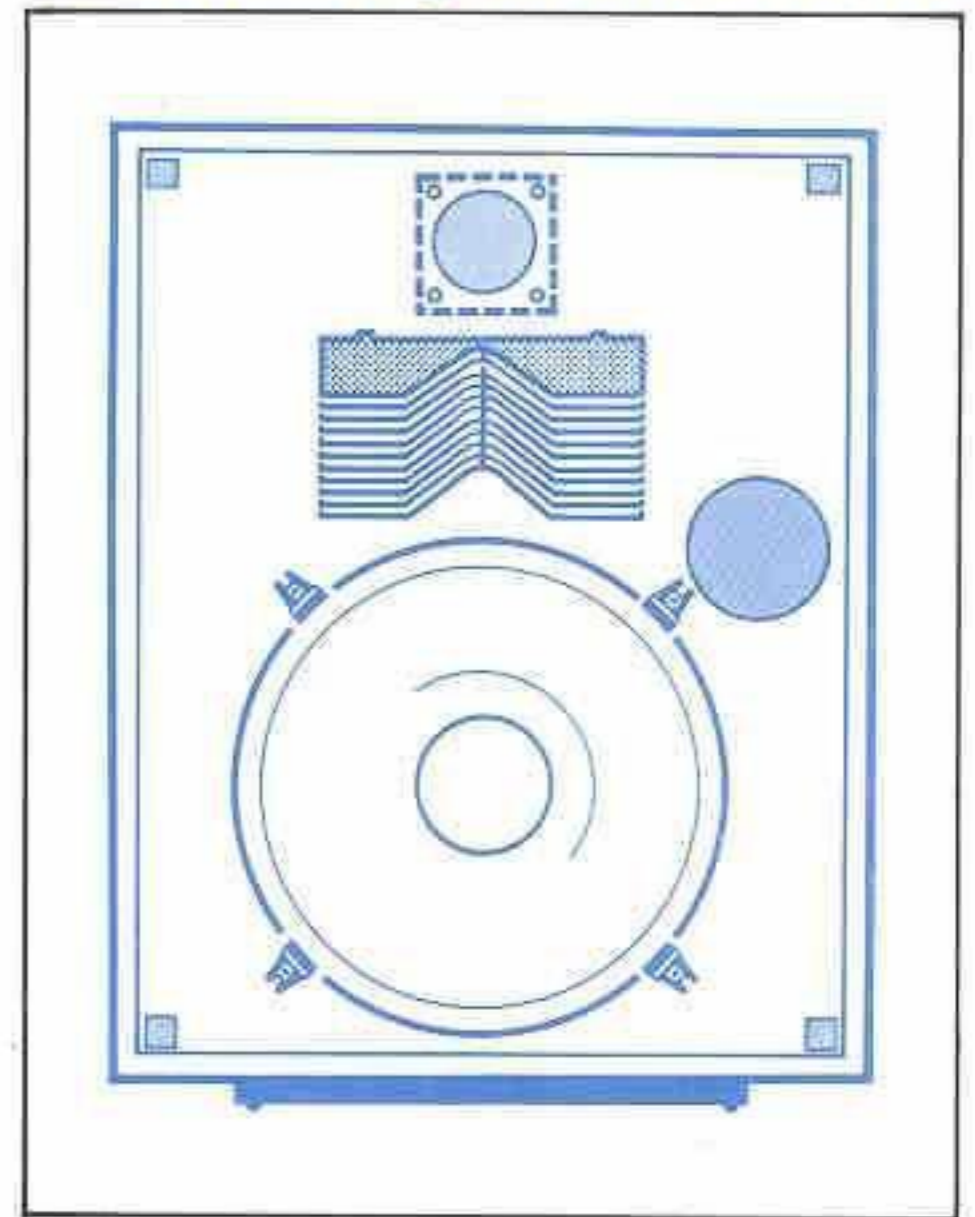


Professional Series

Two-Way Studio Monitors

4330 For Bi-Amplification
4331 With High Level Network



Accurate, smooth reproduction from 35 to 15,000 Hz. ± 3 dB

44 dB SPL at 30 feet with a 1-milliwatt input

100.5 dB SPL at 10 feet at one-half rated power input

Components: 15-inch low frequency loudspeaker and high frequency compression driver with horn/lens assembly

Balance control located behind the removable grille

Oiled Walnut or textured gray enclosure

The 4330 and 4331 Studio Monitors

The 4330 and 4331 are rugged, powerful studio monitors designed for mixdown and mastering control room applications. The result of an extensive research and development effort, they represent a refinement of the classic JBL two-way studio monitor loudspeaker system that has been relied on by a major segment of the recording industry for the past 10 years.

The transducers installed in each system are identical: a newly developed 15-inch low frequency loudspeaker and a wide range high frequency compression driver equipped with a newly developed horn/lens assembly. The 4331 includes the latest design in high level, passive frequency dividing networks, providing total system integration with minimal audible distortion. For studios in which the flexibility afforded by bi-amplification can be utilized, the 4330 is offered with the appropriate input terminals for the required two amplifiers.

Low Frequency Loudspeaker

Bass is provided by a 15-inch loudspeaker designed for power handling capacity, tight reproduction at extreme low frequencies and smooth response through the crossover region. The rigidity, mass and compliance of the dynamic assembly have been carefully researched to provide maximum low frequency bandwidth while allowing optimization of driver efficiency. The 4-inch edgewound copper ribbon voice coil places the greatest amount of conductor in the voice coil gap, providing maximum interaction between the input signal and the permanent magnetic field, contributing both to transient response and efficiency. The 13-pound magnetic assembly is of closed construction, eliminating stray fields and concentrating the full energy of the Alnico V magnet in the voice coil gap.

High Frequency Compression Driver

The compression driver is brought into operation at a slope of 12 dB per octave below the crossover frequency and maintains its smooth output through more than four octaves. Its 10-pound magnetic assembly is energized by an Alnico V magnet. The center pole piece is surrounded by a ring of pure silver that controls the impedance characteristics of the driver, resulting in extended, smooth high frequency response that would otherwise not be possible. The 1.75-inch aluminum ribbon voice coil is treated to withstand the heat generated at power levels typical of professional applications. The diaphragm is pneumatically formed of anodized aluminum foil and bonded to a rigid voice coil support. The waveform from the diaphragm is directed through the concentric channels of a phasing plug prior to dispersion by the horn/lens assembly.

Horn/Lens Assembly

The output of the compression driver is directed through a newly developed exponential horn. The exponential horn causes the waveform to expand at a controlled rate, thus providing a proper load for the driver diaphragm. The lens consists of a series of physical barriers designed to increase the distance traveled by the energy at the edges of the wavefront, while energy toward the center of the wave is relatively unaffected. It consists of 11 plates, with each having a precisely calculated hyperbolic curvature on its projecting surface to spread sound evenly through a controlled horizontal distribution pattern.

Frequency Dividing Network

The 4331 is provided with a high level, passive frequency dividing network. The circuitry has been designed with consideration for the various performance characteristics of the drivers and their locations on the enclosure baffle panel. The network has been designed for continuous high power application; capacitors are non-inductive, non-polarized types with high AC current capacity, and special inductors are used to minimize power losses within the network. Each inductor is calibrated on a sensitive electronic bridge and its value set precisely.

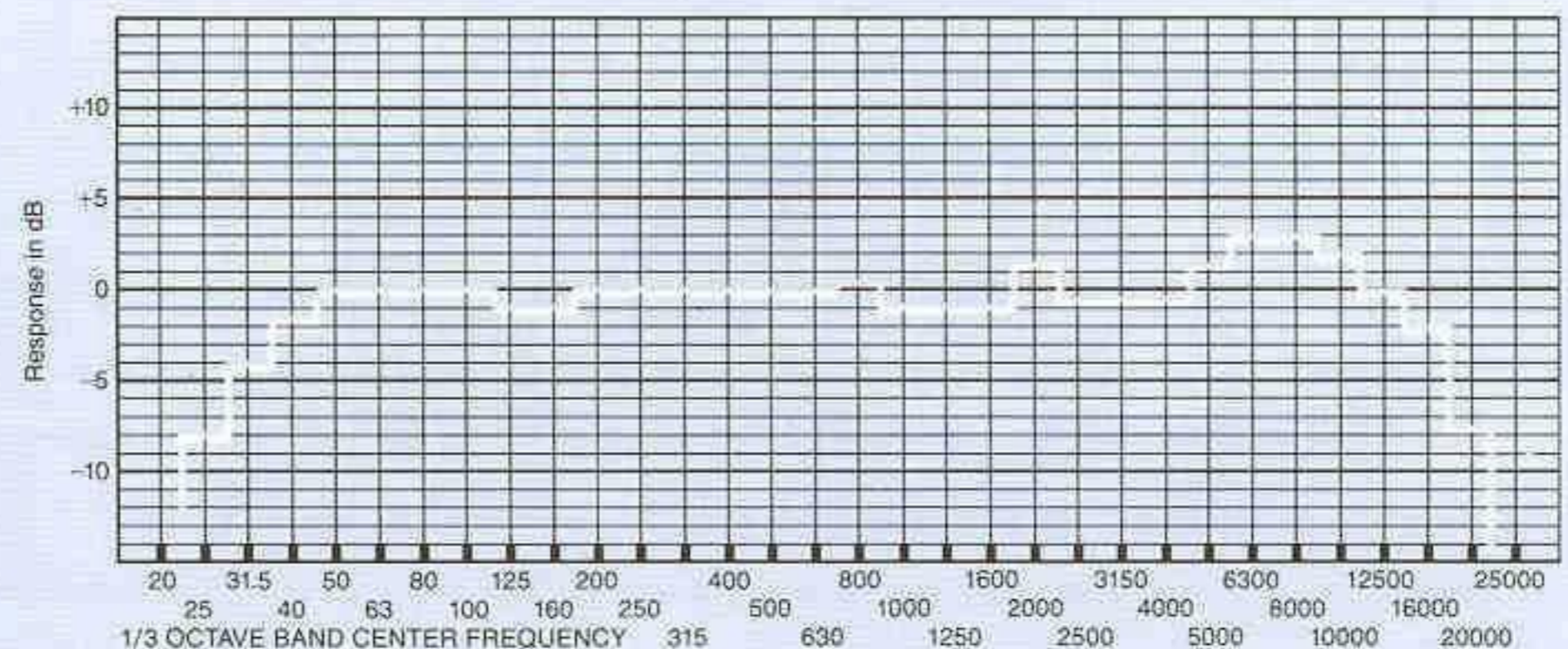
The 4330 is provided with input terminals for the two amplifiers of a bi-amplified installation. A special circuit card providing the precise crossover characteristics for the 4330 is available for use in the JBL 5231 or 5232 Electronic Frequency Dividing Network. Conventional electronic networks can be used, but they may not have the exact frequency and filter slope characteristics required for optimum system performance.

Enclosure

In keeping with current trends in studio design that encourage creativity, JBL studio monitor enclosures feature contemporary styling and are offered in two finishes, each with a complementary grille color. The enclosure, however, contributes much more than striking appearance. The internal volume of the enclosure and physical configuration of the ducted ports are carefully designed to properly load the low frequency loudspeaker for optimum bass response and to control cone excursion, thus minimizing distortion and maximizing power handling capacity of the driver. To minimize resonance, the enclosure is constructed of dense 3/4-inch stock with a 15-ply baffle panel; all joints are carefully lock mitered and glued; the back, side, top and bottom panels are lined with acoustic damping material and are each stiffened by multiple braces glued and screwed to the panel and to the adjacent surfaces of the enclosure.

Test Parameters

The accompanying graph and specifications were compiled from measurements made under standard laboratory test conditions. The complete loudspeaker system, including the enclosure, was mounted flush in the center of a large, flat baffle in a non-reverberant environment. Calibrated condenser microphones were suspended at a measured distance from the sound source, sufficiently out of the near field. All associated electronic equipment was checked and calibrated before tests were run.



Frequency response of the 4330 and 4331 taken with 1/3-octave band pink noise. Measured response contour of a typical system averaged through an inclusive arc of 60° in the horizontal and 30° in the vertical planes does not deviate more than 2 dB from the above curve.

Specifications

Maximum Power Input ¹	
4330	
Below 800 Hz	75 Watts steady state at 8 ohms
Above 800 Hz	30 Watts steady state at 8 ohms
4331	75 Watts steady state at 8 ohms
Nominal Impedance	8 ohms
Power Output ²	100.5 dB SPL measured at 10 ft. (3.0 m) in a room volume of 2000 cu. ft. (56.6 m ³) with 1/2 rated power input (-3 dB)
Frequency Response	
Sine Wave, On-Axis	35 to 15,000 Hz, ±3 dB
1/3-Octave Band	-4 dB at 31.5 Hz,
(500 Hz Reference)	-1 dB at 1 kHz,
	+2 dB at 10 kHz
Polar Response	No less than -3 dB at 60° horizontal and 30° vertical to 12 kHz
Sensitivity ³	83.5 dB SPL measured at 10 ft. (3.0 m) with 1-Watt input averaged from 100 to 1000 Hz
	44 dB SPL measured at 30 ft. (9.1 m) with 1-milliwatt input averaged from 100 to 1000 Hz

Distortion

1/2 Power, 99 dB SPL/10 ft. (3.0 m), Single Frequency

1% or less third harmonic generation from 35 to 800 Hz

2% or less third harmonic generation above 800 Hz

Crossover Frequency⁴

800 Hz

Finish

Textured gray or oiled walnut

Grille

Black fabric with the gray finish; Dark Blue fabric with walnut

Enclosure Volume

4.5 cu. ft. 127 liters

Enclosure Dimensions

30 3/4" x 23 3/4" x 20 1/4" deep
78x60x51 cm deep

Net Weight

4330	94 lbs	43 kg
4331	96 lbs	44 kg

Shipping Weight

4330	111 lbs	50 kg
4331	113 lbs	51 kg

Accessories

5231 Electronic Frequency Dividing Network, single channel
5232 Electronic Frequency Dividing Network, dual channel
52-5130 Crossover Card, required for the low frequency transition of the 4330

Caution

Sound pressure levels produced by the 4330 or 4331 may cause permanent hearing loss. The suggested maximum exposure is 115 dBA for no more than 15 minutes. (Department of Labor Bulletin #334)

¹Power amplifier headroom recommendation is 3 dB minimum, i.e. for a 75-Watt rating use a 150-Watt amplifier.

²Power output measured with a B&K Impulse Precision Sound Level Meter.

³Unlike many "theater type" loudspeaker systems that exhibit sensitivity peaks in the midrange region, the 4330 and 4331 provide substantially the same sensitivity through the full range of audible frequencies. Measured sensitivity below 500 Hz or above 2000 Hz may be considerably greater than that of other systems with higher EIA Sensitivity ratings.

⁴The 52-5130 crossover card installed in a JBL electronic frequency dividing network will provide the appropriate crossover characteristics for the 4330. If another electronic network is used, a 12-dB/Octave filter slope will provide the closest approximation of the 52-5130.