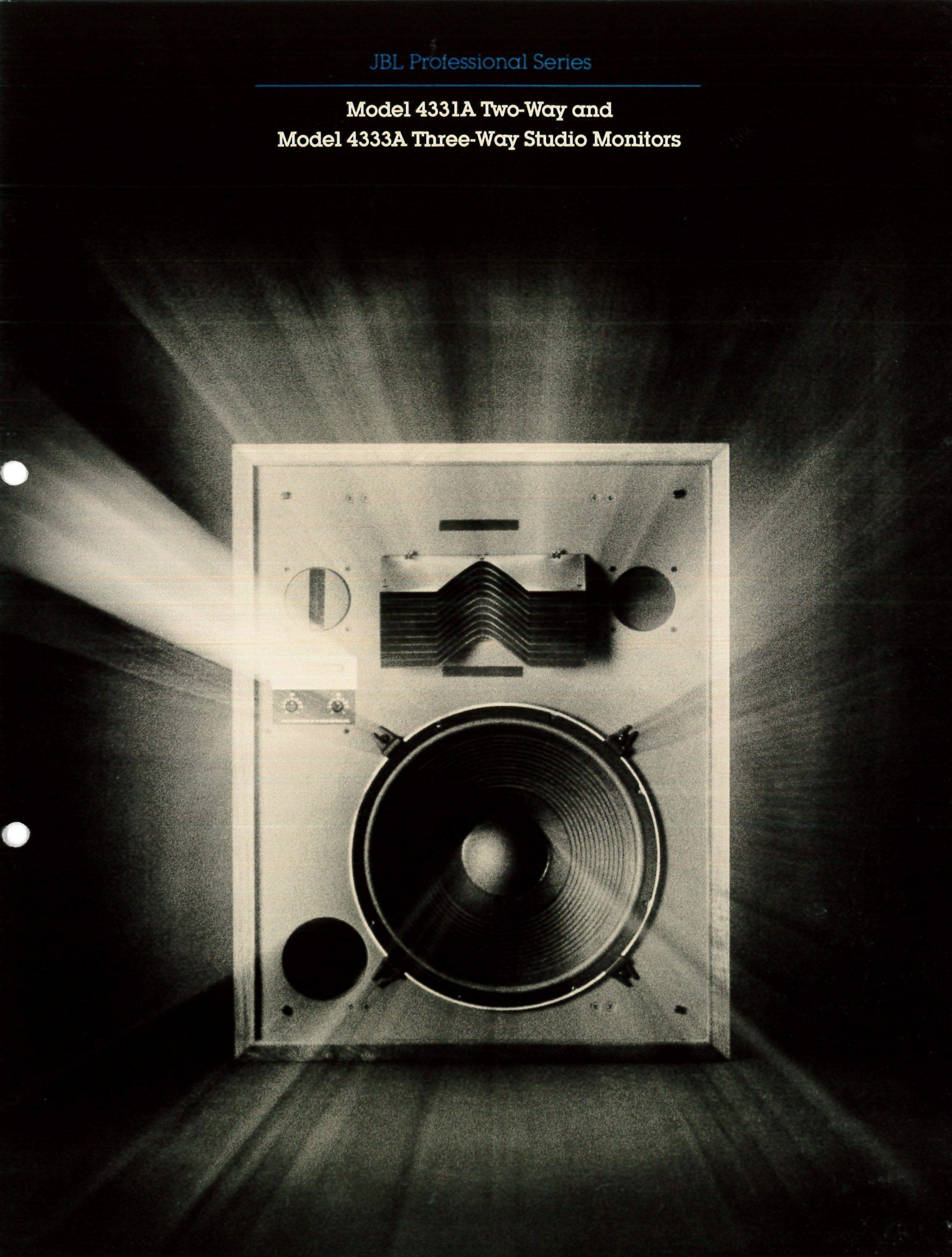
JBL Professional Series

Model 4331A Two-Way and Model 4333A Three-Way Studio Monitors



Accurate, smooth reproduction

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

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

Components: 15-inch low frequency loudspeaker, high frequency compression driver with horn/lens assembly; the 4333A is also furnished with an ultra high frequency transducer.

Mountable in vertical or horizontal orientation

Balance controls located behind the removable grille

Rear mounted switch for bi-amplification or full passive crossover

Oiled Walnut or textured gray enclosure

The 4331A and 4333A Studio Monitors

The 4331A and 4333A 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 15 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, with the addition of an ultra-high frequency transducer in the 4333A which extends the bandwidth to 20,000 Hz.

The network design integrates the performance of the individual drivers, taking into account their location on the enclosure baffle panel and the acoustic effects of the enclosure itself. A switch is provided on the crossover network for the optional selection for use as a fully passive network or a section of a bi-ampified system.

Low Frequency Loudspeaker

Accurate, solid low frequency reproduction is provided by a 15-inch loudspeaker. The cone is selected for optimum stiffness, density and mass to provide the critical low frequency bandwidth and transient response required for monitor applications while maintaining high efficiency. Its 4-inch copper voice coil is manufactured of wire milled to a flat ribbon, then tightly wound on the narrow edge by hand. Edge winding of the voice coil increases the amount of conductor in the magnetic field, resulting in greater transient response and efficiency. Closed construction and precise machining of the 13-pound magnetic assembly concentrates all the magnetic potential of the Alnico V magnet in the voice coil gap.

High Frequency Compression Driver

Treble reproduction is provided by a wide range compression driver capable of high power output and linear response characteristics. Its 1.75-inch edgewound aluminum ribbon voice coil is suspended within a powerful magnetic field produced by a 10-pound magnetic assembly energized by an Alnico V magnet. The aluminum diaphragm is pneumatically formed of anodized aluminum foil. Output of the diaphragm is directed through the concentric channels of a phasing plug prior to final distribution by the horn/lens assembly.

Horn/Lens Assembly

Controlled high frequency distribution is accomplished by an exponential horn and slant-plate acoustic lens. The cast construction of the horn provides rigidity to eliminate resonance. Its taper rate determines the vertical dispersion pattern of the assembly and causes the waveform generated by the compression driver to expand at a controlled rate, providing the proper acoustic load on the driver diaphragm. The acoustic lens is analogous to a divergent optical lens, regulating the distance traveled by energy at various points along the wavefront. The precisely calculated hyperbolic curvature on the projecting surface of the lens determines its specific horizontal distribution pattern.

The acoustic lens is mounted with hook-and-pile mounting tape so it can be remounted allowing the cabinet to be oriented vertically or horizontally.

Ultra-High Frequency Transducer (4333A System Only)

Overtones extending to 20,000 Hz are reproduced by a compression driver having an integral diffraction horn. The 1.75-inch edgewound aluminum ribbon voice coil

4331A Studio Monitor	*4333A Studio Monitor*
2231A	2231A
2420	2420
2312	2312
2308	2308
3131A	2405
	3133A

is suspended within an intense magnetic field provided by a 3¼-pound magnetic assembly energized by an Alnico V magnet. The voice coil is bonded to a ring diaphragm pneumatically formed of aluminum alloy foil. The diffraction horn maintains a wide, controlled dispersion pattern, even at extremely high frequencies.

Frequency Dividing Network

The 4331A and 4333A systems are 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 networks have 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 networks are equipped with terminals and switch so that they may be used for high frequency transitions as bi-amplified systems or full passive networks for conventional systems.

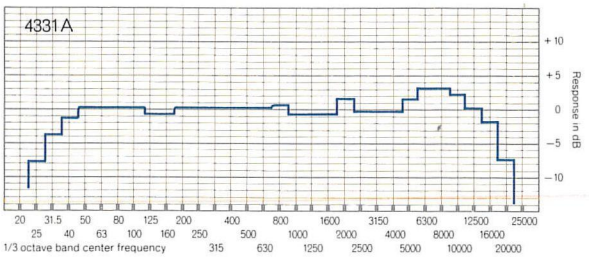
Enclosure

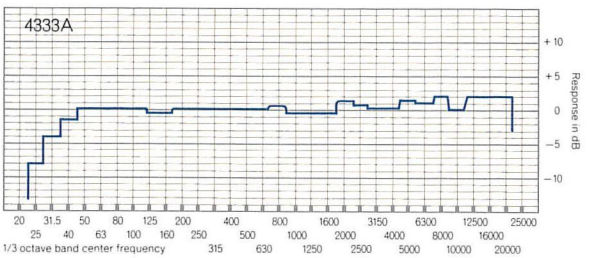
In keeping with current trends in studio design that encourage creativity, JBL studio monitor enclosures feature contemporary styling and are offered in two finishes, each with a complementary grille color. The enclosure, however, contributes as much to performance as it does to the monitor's handsome appearance. The internal volume of the enclosure and physical configuration of the ducted ports are carefully designed to properly load the new low frequency loudspeaker for optimum bass response and to control cone excursion, thus minimizing distortion and maximizing power handling capacity of the driver. To eliminate resonance, the enclosure is constructed of dense ¾- and 1-inch stock with a 15-ply baffle panel; all joints are carefully interlocked 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 an anechoic 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.

Response





Frequency response taken with ⅓-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 curves.

Specifications

Maximum Power Input[1] (Bi-amplification configuration)	75 watts continuous sine wave
Below 800 Hz	75 watts continuous sine wave
Above 800 Hz	30 watts continuous sine wave
Nominal Impedance	8 ohms
Power Output[2]	
4331A	100.5 dB SPL
4333A	101 dB SPL Measured at 3.0 m (10 ft) in a room volume of 57 m³ (2000 cu ft) with ½ rated power input
Frequency Response	
4331A	
Sine Wave, On-Axis	35 to 15,000 Hz, ±3 dB
⅓-Octave Band (500 Hz Reference)	−4 dB at 31.5 Hz, −1 dB at 1 kHz, +2 dB at 10 kHz
4333A	
Sine Wave, On-Axis	35 to 20,000 Hz ±3 dB
⅓-Octave Band (500 Hz Reference)	−4 dB at 31.5 Hz, −0.5 dB at 1 kHz, +2 dB at 20 kHz
Polar Response	
4331A	No less than −3 dB at 60° horizontal and 30° vertical to 12 kHz
4333A	No less than −3 dB at 60° horizontal and 30° vertical to 16 kHz
Sensitivity[3]	93 dB SPL measured at 1m (3.3 ft) with 1-watt input averaged from 100 to 1000 Hz 44 dB SPL measured at 9.1m (30 ft) with 1-milliwatt input averaged from 100 to 1000 Hz
Distortion	
½ Power, 99 dB SPL/3.0 m (10 ft), Single Frequency	1% or less third harmonic generation from 35 to 800 Hz 2% or less third harmonic generation above 800 Hz
Crossover Frequencies[4]	
4331A	800 Hz
4333A	800 Hz and 8500 Hz
Finish	Textured gray or oiled walnut
Grille	Black fabric with the gray finish; Dark blue fabric with walnut
Enclosure Volume	156 litres 5.5 cu ft
Enclosure Dimensions	781 mm x 578 mm x 514 mm 30¾ in x 22¾ in x 20¼ in
Net Weight	
4331A	57 kg 125 lb
4333A	59 kg 129 lb
Shipping Weight	
4331A	60 kg 132 lb
4333A	62 kg 136 lb
Accessories (for bi-amplification)	5233 Electronic Frequency Dividing Network, single channel; 5234 Electronic Frequency Dividing Network, dual channel; 52-5123 Crossover Card, required for the low frequency transition

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

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

[3]Unlike many "theater type" loudspeaker systems that exhibit sensitivity peaks in the midrange region, the 4331A and 4333A 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 sensitivity ratings.

[4]The 52-5123 crossover card installed in a JBL electronic frequency dividing network will provide the appropriate crossover characteristics for the 4331A and 4333A in bi-amplification configuration. If another electronic network is used, a 12-dB/octave filter slope will provide the closest approximation of the 52-5123.

Caution Sound pressure levels produced by the 4331A or 4333A may cause permanent hearing loss. The suggested maximum exposure is 115 dBA for no more than 15 minutes. (Department of Labor Bulletin #334)

JBL continually engages in research related to product improvement. New materials, production methods and design refinements are introduced into existing products without notice as a routine expression of that philosophy. For this reason, any current JBL product may differ in some respect from its published description but will always equal or exceed the original design specifications unless otherwise stated.

JBL Professional Products are not intended for household use.

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