

JBL Monitor Series



Design Theory. JBL studio monitors reflect the very latest developments in acoustic engineering. They provide the accuracy, durability and versatility required in professional installations—with substantial extra capacity available to deal with the unexpected.

Because all artistic judgments of recordings are made subjectively through studio monitor loudspeakers, the quality of the monitors is of vital importance to the recording process. Data and experience acquired through a long and intimate involvement with the recording industry have provided JBL with a thorough knowledge of the requirements for a quality studio monitor. Every JBL model is designed to these criteria.

Wide Bandwidth. JBL monitors have the widest possible bandwidth, while retaining sufficient sensitivity to be practical in use. Good low frequency response is necessary for the engineer to accurately gauge the bass content of the music; extended high frequency response ensures accurate reproduction of the harmonics that give each instrument its distinctive timbre.

Flat Frequency Response. The frequency response of a JBL monitor is flat as well as wide. The engineer can add equalization to adapt the monitor to a particular environment (or personal taste); however, equalization should not be considered as a substitute for loudspeaker quality.

High Power Handling Capability. To accurately reproduce the dynamic range of music, and to withstand the strenuous demands of the studio environment, JBL monitors are built to accommodate massive power input. Because reserve amplifier headroom is also important, JBL monitors combine high sensitivity with this power handling capacity.

High SPL Capability. JBL studio monitors achieve high sound pressure levels with low distortion, to ensure that valid analytical evaluations of musical material may be made. The SPL capabilities of all JBL monitors are sufficient for their intended applications.

Wide Dispersion Angle. Uniform response through a wide, specified dispersion angle must be maintained. If this angle is too narrow or the response is not uniform, the studio engineer may have his working area greatly restricted; in addition, imaging may be unstable, and proper physical location of the monitors will be difficult to achieve.

A JBL studio monitor is an indispensable tool designed to provide the recording professional with accurate reproduction of recorded material; when JBL monitors are properly utilized, the skilled engineer can anticipate superior recordings.

Design Procedures. Since JBL designs each monitor for a specific application, interacting parameters in addition to those above must be considered. Each JBL monitor represents the optimum balance for its particular purpose.

The design work begins with the low frequency loudspeaker. JBL engineers seek the smoothest possible response, maximum bandwidth and lowest distortion consistent with the intended application. Larger drivers generally have greater efficiency; smaller drivers can maintain the same bandwidth, but with reduced efficiency and output level.

Next comes the choice of drivers to cover the remaining bandwidth. Two-way systems can be adequate if flat response to 20 kHz is not required. To cover the full audible range effectively, a system must be at least a three-way design, and a four-way system offers greater advantages: more detailed reproduction, wider dispersion with a more uniform power response, lower intermodulation distortion, and greater phase accuracy.

If transducers with the required characteristics are not available, a totally new transducer will be built specifically for this purpose.

The greatest challenge in studio monitor design is achieving a smooth blending of the acoustical outputs of the various transducers. Using computer technology, JBL engineers first design a crossover network for theoretically ideal transducers, then connect it to the actual drivers in use. The network is then modified until the smoothest possible results are obtained.

high SPL of the larger systems is not required or where space is limited. The system consists of 300-mm (12-in) low frequency, 200-mm (8-in) midrange, 130-mm (5-in) high frequency loudspeakers and an ultra-high frequency transducer. The 4315 can be positioned with the high frequency units at the top or bottom when vertical, or at the left or right when horizontal, to optimize high frequency coverage. Eye bolts can be inserted on the back to suspend the system. It is available in oiled walnut with dark blue grille.

4331A Studio Monitor, 2-way. A refinement of the classic JBL studio monitor, the 4331A utilizes a recently developed 380-mm (15-in) low frequency loudspeaker having extended bass response and greater accuracy, plus a wide range high frequency compression driver with horn/lens assembly. The frequency dividing network can be switched for conventional, passive operation or for bi-amplification. The enclosure contains steel bracing that will accept eye bolts for horizontal or vertical suspension. It is available in oiled walnut with dark blue grille.

4333A Studio Monitor, 3-way. An expansion of the two-way system of the 4331A featuring an ultra-high frequency transducer that extends system bandwidth to 20 kHz, ± 3 dB. The frequency dividing network is switchable for conventional, passive operation or for bi-amplification. The enclosure design is identical to that of the 4331A.

The monitor exhibits exceptional clarity, transient response and low distortion, and is intended for control room and mastering applications. The frequency dividing network can be switched for conventional, passive operation or to allow bi-amplification. Rigidly constructed of 25-mm (1-in) and 19-mm ($\frac{3}{4}$ -in) stock, the enclosure has provision for mirror image mounting of midrange and high frequency components. An internal steel brace will accept eye bolts for horizontal or vertical suspension. Finished in oiled walnut with dark blue grille.

4350 Studio Monitor, 4-way. JBL's largest monitor, the 4350 represents the ultimate in high acoustic output, broad bandwidth, definition and efficiency. Designed for bi-amplification, the system consists of two 380-mm (15-in) low frequency loudspeakers, a 300-mm (12-in) midrange loudspeaker, a high frequency compression driver with horn and acoustic lens, and an ultra-high frequency transducer. The enclosure allows mirror image mounting of high frequency components for optimum source localization. The bottom panel is finished and the base is removable to facilitate inverted suspension by eye bolts anchored to an internal steel support. Available in oiled walnut with dark blue grilles.



	Frequency Response (± 3 dB)	Power Capacity (Continuous Sine Wave)	Nominal Impedance	Sensitivity ¹		Crossover Frequencies ²	Enclosure Volume	Exterior Dimensions (Height x Width x Depth)	Net Weight
				1 W, 1 m (3.3 ft)	1 mW, 30 ft (9.1 m)				
4301	45 Hz - 15 kHz	15 W	8 Ω	88 dB SPL	39 dB SPL	2.5 kHz	30 litres 1 ft ³	483 mm x 306 mm x 211 mm 19 in x 12 ¹ / ₈ in x 11 ¹ / ₄ in	12 kg 26 lb
4311	45 Hz - 15 kHz	40 W	8 Ω	91 dB SPL	42 dB SPL	1.5 kHz, 6 kHz	40 litres 1.5 ft ³	597 mm x 362 mm x 298 mm 23 ¹ / ₂ in x 14 ¹ / ₄ in x 11 ³ / ₄ in	19 kg 42 lb
4315	35 Hz - 20 kHz	60 W	8 Ω	89 dB SPL	40 dB SPL	400 Hz, 2 kHz - 8 kHz	90 litres 3.2 ft ³	854 mm x 521 mm x 327 mm 33 ³ / ₈ in x 20 ¹ / ₂ in x 12 ³ / ₈ in	43 kg 95 lb
4350	30 Hz - 20 kHz	200 W below 250 Hz 100 W above 250 Hz	4 Ω below 250 Hz 8 Ω above 250 Hz	95.5 dB SPL	46.5 dB SPL	250 Hz, 1.1 kHz - 9 kHz	270 litres 9.5 ft ³	889 mm x 121 mm x 508 mm 35 in x 4 ⁷ / ₈ in x 20 in	110 kg 243 lb

1 Sensitivity measured with an input averaged from 500 Hz to 2.5 kHz, with controls set for flattest response

2 The lowest crossover frequency specified for the 4350 is the recommended crossover frequency for bi-amplification

	Frequency Response (± 3 dB)	Power Capacity ¹ (Continuous Sine Wave)	Nominal Impedance	Sensitivity ²		Crossover Frequencies ³	Enclosure Volume	Exterior Dimensions (Height x Width x Depth)	Net Weight
				1 W, 1 m (3.3 ft)	1 mW, 30 ft (9.1 m)				
4331A	35 Hz - 15 kHz	75 W	8 Ω	93 dB SPL	44 dB SPL	800 Hz	156 litres 5.5 ft ³	778 mm x 619 mm x 514 mm 30 ³ / ₈ in x 24 ³ / ₈ in x 20 ¹ / ₂ in	57 kg 125 lb
4333A	35 Hz - 20 kHz	75 W	8 Ω	93 dB SPL	44 dB SPL	800 Hz, 8.5 kHz	156 litres 5.5 ft ³	778 mm x 619 mm x 514 mm 30 ³ / ₈ in x 24 ³ / ₈ in x 20 ¹ / ₂ in	59 kg 129 lb
4343	35 Hz - 20 kHz	75 W	8 Ω	93 dB SPL	44 dB SPL	300 Hz, 1.25 kHz, 9.5 kHz	156 litres 5.5 ft ³	1051 mm x 635 mm x 435 mm 41 ³ / ₈ in x 25 in x 17 ¹ / ₈ in	79 kg 175 lb

1 When bi-amplified, the 4331A and 4333A are rated at 75 W below 800 Hz and 30 W above 800 Hz. The 4343 is rated at 75 W below 300 Hz and 75 W above 300 Hz.

2 Sensitivity measured with an input averaged from 500 Hz to 2.5 kHz, with controls set for flattest response

3 The lowest crossover frequency specified refers to operational characteristics with the network set for conventional, passive operation and is also the recommended crossover frequency for bi-amplification.

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.

Intended Applications. JBL provides complete specifications on all studio monitors. These specifications are derived from actual production units. The tests are conducted in acoustically neutral "hemispherical free-field" conditions. Any significant deviations from these results can thus be attributed to the acoustics of the control room and the manner in which the loudspeaker systems are mounted.

While JBL endorses no specific control room design, certain characteristics of the interface between the room and the loudspeaker system must be taken into account in order to achieve the desired performance.

JBL monitors may be operated in either the horizontal or vertical position, but vertical mounting will provide the best stereo imaging. Imaging will also be improved by installing the monitors symmetrically in a symmetrical room, because the left and right reflections will be identical. The larger monitors permit the user to arrange the drivers in either a left-hand or right-hand configuration to facilitate symmetrical placement.

For the smoothest response, JBL monitors should be mounted with the baffle surfaces flush with the wall. If this is not possible, the monitors should be mounted against the wall. Other mounting locations, such as away from a wall or at the intersection of room surfaces, cause uneven bass response.

The choice of a monitor should be based on the expected maximum SPL to be achieved in the room. Adequate amplifier power should be provided to allow full transient impact, and to minimize the risk of damage to the high frequency transducers. JBL recommends a minimum of 3 dB of amplifier headroom.

The larger monitors may be switched for bi-amplification by the user; all necessary protection components are built in. JBL recommends 12 dB/octave Butterworth active dividing networks (such as a JBL 5233 or 5234, with appropriate crossover cards) when the monitors are switched for bi-amplification.

The level controls of the monitors should be adjusted for the best balance and the best center monaural image. The controls are not necessarily flat at the "12-o'clock" position; JBL recommends user experimentation to achieve the desired results.

Every JBL studio monitor loudspeaker system is the product of extensive development and testing. Each is as ideal for its intended application as present technology permits.

4301 Broadcast Monitor, 2-way. JBL's smallest monitor is designed primarily for the broadcast control room and edit booth, and has achieved wide acceptance in home studios, remote recording and quality control areas. Smooth, wide range response and low distortion are obtained from 200-mm (8-in) low frequency and 36-mm (1.4-in) high frequency loudspeakers. A high frequency level control is provided on the front baffle. Available in oiled walnut with dark blue grille.

4311 Control Monitor, 3-way. A compact loudspeaker system designed for control rooms and other applications where space is restricted, the 4311 utilizes 300-mm (12-in) low frequency, 130-mm (5-in) midrange and 36-mm (1.4-in) high frequency loudspeakers.



4311 Components

Front panel controls, below the grille, permit convenient adjustment of midrange and high frequency levels. Available in oiled walnut with black grille.

4315 Compact Studio Monitor, 4-way. Exhibiting exceptionally smooth, wide-band reproduction, clarity, superior transient response and controlled dispersion, the 4315 is similar in sound character to the larger studio monitors. It is recommended whenever the



4315A Components



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