

JBL Professional Series

Model 4315B Studio Monitor



Accurate, smooth reproduction from 35 to 20,000 Hz, ± 3 dB

90 dB SPL, 1 W, 1 m (3.3 ft)

Components: 300 mm (12 in) low frequency loudspeaker; 200 mm (8 in) midrange loudspeaker; 130 mm (5 in) high frequency loudspeaker; ultra-high frequency ring radiator

Level controls behind removable grille

Oiled walnut or textured gray enclosure

The 4315B Studio Monitor

The 4315B, a compact studio monitor, is an extension of the research and development that produced JBL's largest and most accurate studio monitors. The 4315B accurately reproduces the full range of musical fundamentals and overtones at sound pressure levels approaching those of the larger JBL systems.

The 4315B is characterized by exceptionally smooth, wide-band reproduction, clarity, excellent transient response, and a controlled dispersion pattern. Its performance is obtained through total integration of the components that make up its four-way system. Each transducer reproduces only that portion of the audio spectrum for which it is specifically designed, resulting in greatest utilization of each driver's frequency response, transient capability, and dispersion characteristics. The effect is a true monitor system, compact in physical size, whose sound distribution pattern is such that the operator can be located relatively close to the enclosure.

Low Frequency Loudspeaker

The 300 mm (12 in) low frequency loudspeaker features solid bass reproduction and smooth response well beyond its crossover frequency. Excellent transient response is combined with maximum efficiency consistent with the bandwidth of the driver. Mounted in a ported enclosure having an internal volume of 91 L (3.2 ft³), the unit is energized by an 8.5 kg (18½ lb) magnetic assembly. The flux density is 1.2 T (12,000 gauss). Constructed to precise tolerances, the magnetic assembly utilizes JBL's unique Symmetrical Field Geometry (SFG), which greatly reduces second harmonic distortion. A 100 mm (4 in) voice coil, fabricated of copper wire milled to a ribbon and hand-wound on edge, is mounted on a heat-resistant support affixed to a rigid cone having optimum mass, density, and rigidity. The cone is supported by a highly flexible termination that damps spurious resonances and allows the long, linear excursion necessary for high volume levels at very low frequencies.

Midrange Loudspeaker

The smooth performance and instantaneous transient response of the 200 mm (8 in) midrange driver is responsible for the outstanding instrumental clarity and vocal definition of the system. The 4.7 kg (10¼ lb) magnetic assembly incorporates JBL's SFG design. The 76 mm (3 in) voice coil is constructed of edgewound copper ribbon and suspended in a magnetic field having a flux density of 0.9 T (9,000 gauss). The integrally stiffened cone is terminated with an exclusive JBL ring compliance that allows long excursions while maintaining linear travel.

High Frequency Loudspeaker

Smooth, widely dispersed high frequency reproduction is provided by a 130 mm (5 in) cone transducer capable of considerable acoustic output. It utilizes a 22 mm (¾ in) edgewound copper ribbon voice coil, suspended within a powerful magnetic field (1.35 T, 13,500 gauss) generated by a 0.74 kg (1½ lb) magnetic assembly. The edgewound voice coil contributes to the exceptional transient response and acoustic efficiency. Like the midrange loudspeaker, the unit is housed in a separate subchamber within the enclosure to prevent acoustical interaction with the other transducers.

Ultra-High-Frequency Transducer

The exceptional clarity and realism of overtones lying above 8000 Hz is produced by the ultra-high-frequency transducer. The unit consists of a ring radiator and diffraction horn specifically designed for reproduction and dispersion of energy at the extreme high end of the audio spectrum. The ring radiator, a type of compression driver, consists of a 1.5 kg (3¼ lb) magnetic



assembly. Its 44 mm (1 3/4 in) edgewound aluminum ribbon voice coil is suspended within a field having a flux density of 1.65 T (16,500 gauss), and it is affixed to a heat-resistant support bonded to a ring diaphragm pneumatically formed of 0.05 mm (0.0022 in) aluminum stock. The integral diffraction horn produces a wide high-frequency dispersion pattern.

Frequency Dividing Network

The 4315B is provided with a high level, passive frequency dividing network having circuitry designed with consideration for the various performance characteristics of the drivers and their location 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 is set precisely.

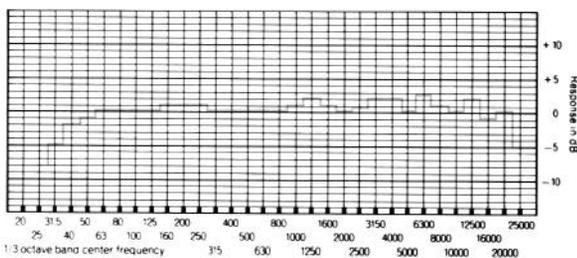
Enclosure

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 low frequency loudspeaker is housed in a chamber having an internal volume of 91 L (3.2 ft³). The midrange loudspeaker is enclosed in a separate, isolated subchamber having an internal volume of 2.8 L (0.1 ft³). The internal volume of the acoustic chambers and physical configuration of the ducted ports are carefully calculated to load the low frequency and midrange loudspeakers for optimum bass response and to control cone excursion, thus minimizing distortion and maximizing power handling. For minimum resonance, the enclosure is constructed of dense 19 mm (3/4 in) 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 Conditions

The accompanying graph and specifications were compiled from measurements made under carefully controlled conditions. The loudspeaker system was mounted flush in the center of a large, flat baffle in a non-reverberant environment. Laboratory condenser microphones were suspended in a spherical pattern around the acoustic center of the system, sufficiently distant to be out of the near field so that data taken would reflect the total output of the combined transducers. In keeping with accepted laboratory practice, all equipment was checked and calibrated before tests were run.

Response



Frequency response of the 4315B taken with 1/2 octave band pink noise. Measured response contour of a typical system averaged through an inclusive arc of 80° in the horizontal and 60° in the vertical planes does not deviate more than 2 dB from the above curve.

Specifications

| | | |
|-----------------------------|--|--------|
| Power Capacity ¹ | 60 W continuous sine wave | |
| Nominal Impedance | 8 Ω | |
| Power Output ² | 98 dB SPL measured at 3.0 m (10 ft) in a room volume of 57 m ³ (2000 ft ³) with 1/2 rated power input (-3 dB) | |
| Frequency Response | Sine Wave, On-Axis 35 Hz - 20 kHz, ±3 dB | |
| | 1/2-Octave Band (400 Hz Reference) -5 dB @ 31.5 Hz | |
| | +2 dB @ 6.3 kHz | |
| | 0 dB @ 20 kHz | |
| Polar Response | No less than -3 dB at 80° horizontal and 60° vertical to 16 kHz | |
| Sensitivity ³ | 90 dB SPL, 1 W, 1 m (3.3 ft) | |
| Distortion | 1/2 Power, 95 dB SPL/3.0 m (10 ft), Single Frequency 0.5% or less third harmonic generation from 35 Hz to 20 kHz | |
| Crossover Frequencies | 400 Hz, 2 kHz, 8 kHz | |
| Finish | Textured gray or oiled walnut | |
| Grille | Black fabric with the gray finish; Dark blue fabric with walnut | |
| Enclosure Volume | Low Frequency Chamber 91 L 3.2 ft ³ | |
| | Midrange Chamber 2.8 L 0.1 ft ³ | |
| Enclosure Dimensions | 854 mm x 521 mm x 327 mm 33 3/8 in x 20 1/2 in x 12 1/4 in | |
| Net Weight | 47 kg | 103 lb |
| Shipping Weight | 53 kg | 117 lb |

¹ Power amplifier headroom recommendation is 3 dB minimum; i.e., for a 60 W rating use a 120 W amplifier.

² Measured with a B&K Impulse Precision Sound Level Meter.

³ Averaged from 100 to 1000 Hz. Unlike many "theater type" loudspeaker systems that exhibit sensitivity peaks in the midrange region, the 4315B provides 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.