

Professional Series Model 4311 Control Monitor

Smooth, powerful, wide-range response within a compact enclosure.

Components: 12-inch, long excursion, low frequency loudspeaker; 5-inch midrange transducer; 1.4-inch high frequency direct radiator; matched frequency dividing network with front panel controls providing separate adjustment of midrange and high frequency output,

90° dispersion allows vertical or horizontal placement.

A product of JBL's long experience and intimate involvement with the recording industry, the 4311 is a powerful, yet compact, monitor loudspeaker system. Its wide-band reproduction at loudness levels required in professional work make the 4311 ideally suited for control room installations, small studios, mixdown facilities, broadcast monitors and portable playback systems.



Model 4311 Control Monitor

Low Frequency Loudspeaker

Bass material is reproduced by a powerful, long excursion, 12-inch loudspeaker having a 3-inch diameter edgewound copper ribbon voice coil operating in a magnetic field of 10,400 gauss. The magnetic assembly, energized by an Alnico V magnet, weighs 6.75 pounds; free air resonance is 22 Hz. The surface of the cone is coated with an exclusive damping formulation that provides mass and density to optimize bass performance, prevent spurious resonance and provide smooth performance extending into the midrange region.

Midrange Transducer

Transition to the midrange unit is made through a crossover frequency of 1500 Hz. The 5-inch transducer provides clarity and freedom from distortion, even at the high loudness levels encountered in professional applications. The transducer is energized by an Alnico V magnet housed in a closed assembly having a total weight of 2.75 pounds and creating a magnetic field of 16,500 gauss. The 7/8-inch diameter copper voice coil drives a 4-inch, edge-damped cone that operates as a true piston, providing smooth frequency response and wide dispersion throughout its operating range.

High Frequency Direct Radiator

Reproduction above 6000 Hz is accomplished by a 1.4-inch

Enclosure

As with all JBL loudspeaker systems, the component transducers, frequency dividing network and enclosure are designed and tested to function as a single, integrated unit. The enclosure is solidly constructed of ³/₄-inch stock throughout with lock-mitered, wood-welded joints to prevent unwanted resonance. Internal padding absorbs spurious reflections and standing waves. All components mount directly to the baffle panel and are removable from the front of the enclosure. A ducted port provides proper acoustical loading of the low frequency loudspeaker.

Adjustable Response Contour

The frequency dividing network of the 4311 is provided with front panel controls to allow separate regulation of output in the 1500 to 6000 Hz "presence" range and the "brilliance" region above 6000 Hz. Controls are continuously variable from maximum to full off. With suitable settings of the two controls, the frequency response contour of the 4311 can be altered to compensate for almost any acoustical environment, or to achieve the tonal balance desired. Control scales are clearly marked so that special settings can be logged and easily reset when needed.

Performance Characteristics

The accompanying graph and specifications were compiled from measurements made under standard laboratory test conditions. The loudspeaker system was mounted flush in the center of a large, flat baffle in an anechoic environment; a calibrated condenser microphone was suspended at a known distance from the sound source, sufficiently far to be safely out of the near field; and all electronic equipment was checked and calibrated before tests were run. The on-axis frequency response of a typical 4311 does not vary more than ±3 dB from 45 to 15,000 Hz. Due to the wideangle characteristics of the midrange and high frequency units and their physical orientation, response measured up to 45° off-axis, horizontally or vertically, does not deviate more than 6 dB from on-axis response at 2 kHz nor more than 10 dB at 8 kHz. The 4311's lack of distortion is equally outstanding. Distortion is inaudible even at high power levels and at very low frequencies, as shown in the photo at right. While specifications indicate that the 4311 has impressive performance characteristics, they cannot convey the full impact of an extended listening evaluation. Clean, crisp, wide-range performance, even at very loud levels; powerful bass fundamentals without doubling and lifelike voice projection are qualities found in few loudspeaker systems, regardless of size or price. When heard from a monitor

direct radiator. Its 1.6-pound magnetic assembly and ⁵/₈-inch diameter copper voice coil drive a cone and center dome with controlled linearity assured by an impregnated cloth termination. The voice coil, suspended in a magnetic field of 15,000 gauss, is unusually large in relation to cone size for efficiency and exceptional transient response. The small cone diameter is responsible for wide, uniform dispersion of high frequency energy; a ring of dense foam surrounds the moving assembly to damp unwanted radiation and reflections.

Frequency Dividing Network

The frequency dividing network installed in the 4311 has been designed and tested to achieve the smoothest possible transitions between component loudspeakers. All network components are of the highest quality. Capacitors are noninductive, non-polarized types with high AC current capacity built expressly for use in dividing networks and individually tested for conformity to rigid performance standards. occupying less than 2.5 cubic feet, the effect is little less than awesome. No other loudspeaker system approaches the JBL 4311 in its combination of versatility, outstanding performance, reliability and small size.

Bandwidth-On-Axis



Response contour of system with controls set "flat." (Presence set at "5," Brilliance set at "5.")

Measured on-axis response of a typical 4311, including all peaks and dips, does not deviate more than 3 dB from above curve.

35-Hz Output





Section drawing of the 12-inch low frequency transducer.



This unretouched photo shows the acoustic output of the system when driven by a 50-Watt RMS sine wave signal at 35 Hz. A laboratory microphone was used to pick up the sound from the 4311. The signal from the microphone was connected directly to an oscilloscope and the trace photographed.

Sustained performance at this intensity would not be encountered during normal use. A 50-Watt sine wave represents a far more difficult job for the loudspeaker than its rated capacity of 75 Watts program material, particularly in the very low frequency range. Even so, it can be seen that the 4311 produces an almost perfect sine wave. (Note: Below 50 Hz, most loudspeaker systems produce substantial distortion with an input of only a few Watts.) Interior view of the 4311.

Architectural Specifications

The loudspeaker system shall consist of three direct-radiating transducers and a frequency dividing network installed in an enclosure tuned with a ducted port. Loudspeakers, network and enclosure are to be manufactured and assembled by a single manufacturer. Components shall be removable from the front of the enclosure.

The 12-inch low frequency loudspeaker shall have a 3-inch diameter edgewound copper ribbon voice coil operating in a magnetic field of at least 10,400 gauss. A heavy duty 5-inch transducer shall reproduce the range from 1500 to 6,000 Hz. It shall have a 7/8-inch diameter copper ribbon voice coil operating in a magnetic field of at least 16,500 gauss. Material above 6 kHz shall be reproduced by a third direct radiator having a cone diameter of approximately 1.4 inches, a 5/8-inch diameter copper voice coil and a gap flux density of at least 15,000 gauss.

The frequency dividing network shall include two controls, accessible from the front of the system, to adjust relative intensities of the midrange and high frequency drivers. The controls shall be identified as "Presence" and "Brilliance" respectively.

Set for flattest output, the free-field frequency response of a typical system shall not vary more than ±3 dB from 45 to 15,000 Hz. Response measured up to 45° off-axis, horizontally or vertically, shall not deviate more than 6 dB from on-axis response at 2 kHz or more than 10 dB at 8 kHz. These specifications shall include the effects of the frequency dividing network and any interaction between transducers. Specifications extrapolated from the response curves of individual loudspeakers are not acceptable.

The loudspeaker system shall have a nominal impedance of 8 ohms and a power capacity of at least 35 Watts sine wave or 75 Watts program material. The EIA sensitivity of the system (measured at 30 feet on-axis with an input of 1 milliwatt) shall be approximately 42 dB.

The enclosure shall be solidly constructed of 3/4-inch stock with all joints lock-mitered and glued. Overall dimen-



75 Watts continuous program **Power Capacity** 1500 and 6000 Hz **Crossover Frequencies** 8 ohms Nominal Impedance 90° horizontal and vertical **High Frequency Dispersion** 45-15,000 Hz ±3 dB Frequency Response 42 dB at 30 feet with a 1-mW input (EIA standard), averaged 500 to 2500 Hz, with controls set for flattest response. 81 dB at 10 feet with a 1-Watt input, averaged 500 to 2500 Hz, with controls set for flattest response. Textured gray or oiled walnut with black fabric grille. 231/2 " x 141/4 " x 113/4" deep 60 x 36 x 30 cm deep 42 lbs (19 kg)

sions shall be no greater than 24" x 15" x 12" deep (61 x 38 x 30 cm). Finish shall be textured gray or oiled walnut with a black fabric grille.

The system shall be JBL Model 4311.

Shipping Weight

Specifications

Sensitivity*

Finish

Dimensions

Net Weight

49 lbs (22 kg)

"Note: Unlike many "theater type" loudspeaker systems that exhibit sensitivity peaks in the midrange, the JBL Control Monitor 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 EIA sensitivity ratings.

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 is always warranted to equal or exceed the original design specifications unless otherwise stated.

JBL

Professional Series

Professional Division

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