



BOSE®

Bose® 402™ Loudspeakers

General Description

The Bose 402 sound components provide a fully modular system designed for high quality reinforcement of voice and music.

Bose 402 or 402-W loudspeakers work with a 402C systems controller for active equalization of the system. The 402 loudspeaker is the practical choice for applications requiring a rugged, portable enclosure. The 402-W loudspeaker is intended for use in permanent indoor sound system installations. Acoustic properties of both loudspeakers are identical.

The 402C systems controller assures smooth, accurate spectral response across the entire operating range of the 402 loudspeaker. Fourth order subsonic and ultrasonic band-limiting filters use power efficiently, reducing harmonic distortion and high excursion cone instability while providing two independent signal channels.

- **Modular components for system design flexibility**
- **Articulated Array® baffle ensures effective sound dispersion**
- **Electronic systems controller**

Technical Information

Frequency range
90Hz – 16kHz

Active equalization
(with 402C systems controller)
Required

Nominal impedance
8Ω

Maximum acoustic output
110dB-SPL average, 119dB-SPL peak

Power handling capacity
120W continuous pink noise, 90Hz – 16kHz

Recommended amplifier power
120 Watts minimum
240 Watts maximum

Sensitivity
Full range, 90dB-SPL @ 1 Watt,
1 meter (1W, 90Hz – 16kHz)

Horizontal beamwidth
120°

Vertical beamwidth
60°

Enclosure construction
402 loudspeaker: mica-reinforced polyethylene copolymer structural foam
402-W loudspeaker: acrylic coated, walnut grained vinyl laminate on particle board

Fusing
Built-in fuse holder for 3A-250V fast acting 3AG Series fuse (replaceable)

Insert locations
402 loudspeaker: three M8 (8 mm)
402-W loudspeaker: none

Connectors
402 loudspeaker: two (2) ¼" phono jacks
402-W loudspeaker: barrier strip

Dimensions
402 loudspeaker:
23¼"(H) x 8⅞"(W) x 7¼"(D)
(59 x 21 x 18 cm)
402-W loudspeaker:
23"(H) x 8"(W) x 7"(D)
(58 x 20 x 18 cm)

Weight
402 loudspeaker: 15 lb (7 kg)
402-W loudspeaker: 17 lb (8 kg)

Component Description

Each 402 loudspeaker employs four 4½" (11.4 cm) Bose D-22A high-sensitivity drivers, mounted vertically on a faceted Articulated Array® baffle assembly. The drivers feature low-impedance, edge wound aluminum voice coils, 12-ounce Ferrite V ceramic magnets, and molded polyester frames. Their advanced cone and motor system gives them high linear excursion capability and power output.

Tuned reactive radiator slots reduce distortion by controlling the cone excursion required to reproduce mid-bass frequencies. An acoustic diffractor broadens and smooths the horizontal radiation pattern of the inner driver, making side-to-side room coverage more uniform. A built-in directivity control circuit maintains the vertical dispersion pattern through the high-frequency overload.

The Bose 402C systems controller requires one rack unit of mounting space. It is capable of providing crossover functions, active electronic equalization, and dual channel signal processing for both the 402 loudspeakers and the 502®B and 502BP Acoustimass® enclosures.

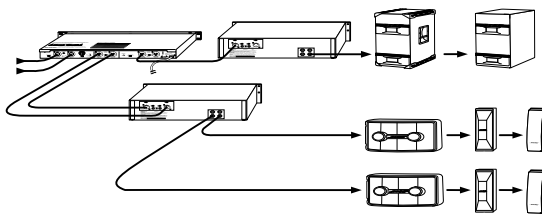


Figure 1

Figure 3 502BP Owner's Guide

BOSE Professional Products

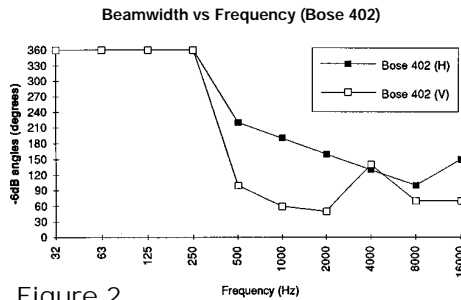


Figure 2

The systems controller features -10/+4dB-V input sensitivity switches, all-balanced inputs and outputs, -18/+3dB bass level control, and a bass mono sum switch. It also has automatic output muting on turn-off, and a secure rear-panel operating mode switch.

For information on the 502^WB or 502BP Acoustimass[®] bass enclosure, refer to the technical data sheet for that product.

Available for the 402^C system controller is the Bose[®] OC-1 option card, which allows the 402 system to include the Bose Acoustic Wave[®] Cannon[™] System Series II loudspeaker as a bass component.

For information on the Acoustic Wave[®] Cannon System II loudspeaker, refer to the technical data sheet for that product.

Basic System Configuration

The Bose 402 system provides a flexible, building-block approach to meet the sound reinforcement requirements of many applications.

Figure 1 shows a basic 402 system configuration consisting of two 402 loudspeakers, one 402C system controller, and one 502B or 502BP loudspeaker.

Figure 2 provides a graph of the basic system's vertical and horizontal beamwidth.

Figure 3a and **3b** show front and back views of the 402C systems controller.

Figure 3a

Figure 3b

Systems Controller Technical Information

Audio channels
Two

Operating modes
Full-range, bi-amp, option (w/option card)

Rear panel connectors
Balanced input x 2 (XLR)
Balanced high-freq. output x 2 (XLR)
Balanced low-freq. output x 2 (XLR)

Crossover
140Hz in bi-amp mode
125Hz with OC-1 card

Rear panel controls
Mode switch
Input sensitivity switch x 2 (-10dB-V, +4dB-V)
Bass level control (range -18dB +3dB)
Bass mono switch (norm/sum)

Electrical specifications
Channel separation: >60dB @ 1kHz
Input impedance: 2.4k Ω nominal
Output impedance: 600 Ω nominal
Output level: 8V RMS max. into 600 Ω

Mechanical specifications
Dimensions: 1.75" (H) x 19.0" (W) x 8.0" (D)
(4.4 x 48.3 x 20.3 cm)
Weight: 5.5 lb (2.5 kg)

Warranty Information

The Bose 402 and 402-W loudspeakers are covered by a 5-year transferable limited warranty. The Bose 402C systems controller is covered by a 2-year transferable limited warranty.

Engineers' and Architects' Specifications

The loudspeaker shall be a multiple driver system with matched active equalization as follows:

The transducer complement shall consist of four (4) full-range drivers of 11.4 cm diameter, mounted vertically on a four-faceted, baffle assembly. Each driver shall have a rated impedance of 2 Ω , resulting in a composite nominal impedance of 8 Ω when wired in series.

The loudspeaker system sensitivity shall be 90dB-SPL in the 90Hz – 16kHz range, with both measurements referenced to a 1 Watt (2.83V) pink noise input at 1 meter. The nominal horizontal beamwidth shall be 120 degrees, and the nominal vertical beamwidth shall be 60 degrees. The power handling capacity of the loudspeaker shall be 120 Watts continuous pink noise, band-limited from 90Hz to 16kHz.

The input connectors, located on the rear of each loudspeaker enclosure, shall consist of two (2) parallel-wired 1/4 inch (6.3 mm) phone jacks (female) on the 402 loudspeaker. They shall consist of a screw-type barrier strip on the 402-W loudspeaker.

The speaker enclosure of the 402 loudspeaker shall be composed of copolymer materials, while the 402-W enclosure shall be acrylic-wrapped particle board. Outer dimensions of the 402 loudspeaker shall be 23 3/4" (H) x 8 1/8" (W) x 7 1/4" (D) (59 x 21 x 18 cm); its weight shall be 15 lb (7 kg). Outer dimensions of the 402-W loudspeaker shall be 23" (H) x 8" (W) x 7" (D) (56 x 20 x 19 cm); its weight shall be 17 lb (8 kg).

The loudspeaker shall be the Bose[®] 402[™] or 402-W loudspeaker system.

The loudspeaker system shall be provided with a separate system controller, to be connected before the input(s) of the system power amplifier(s).

The fixed, 2-channel system controller shall provide active electronic equalization and crossover functions. It shall include an operating mode switch, input sensitivity switch, low-frequency output level control, and mono sum switch.

The system controller shall use screw-type terminal strips for balanced input and output wiring connections. Outer dimension of the systems controller shall be 1.75" (H) x 19.0" (W) x 8.0" (D) (4.4 x 48.3 x 20.3 cm). It shall fit in the single space of a standard 19" equipment rack for mounting. Its weight shall be 5.5 lb (2.5 kg).

The electronic controller shall be the Bose 402C systems controller.

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