

BOSE®

Bose® Panaray® 502® A, 502 B, and 502 BEX Loudspeakers



Technical Information

502 A Controlled Array

Frequency range

130Hz to 15kHz

Nominal impedance

8Ω

Maximum acoustic output¹

112dB-SPL average; 121dB-SPL peak

Recommended amplifier power

150-600W continuous into 8Ω

Sensitivity²

90dB-SPL (1W, 1m), 130Hz to 15kHz

Beamwidth (-6dB point)

120° horizontal; 70° vertical

Long-term power handling³

150W continuous

Mechanical specifications

Dimensions: 23.5"H x 5.75"W x 6.75"D
(59.7 cm H x 14.6 cm W x 17.1 cm D)

Weight: 15 lb (6.8 kg)

Mounting points: Six (6) 8mm threaded inserts, 11mm depth

Fuse: 4-ampere AGC 4 (Buss) or 3AG (Littlefuse)

Connectors: Two (2) parallel-wired barrier strips⁴

502 B and 502 BEX Acoustimass® Enclosures

Frequency range

502 B: 55Hz to 150Hz

502 BEX: 55Hz to 180Hz

Nominal impedance

8Ω

Maximum acoustic output¹

115dB-SPL average; 122dB-SPL peak

Recommended amplifier power

450 to 1200 watts continuous into 8Ω

Sensitivity²

90dB-SPL (1W, 1m), 55Hz to 150Hz

Long-term power handling³

450W continuous

Mechanical specifications

Dimensions:

31.0" H x 14.0" W x 15.5" D
(78.7" cm H x 35.6 cm W x 39.4 cm D)

Weight: 85 lb (38.6 kg)

Mounting points: Eight (8) 8mm threaded inserts, 20mm depth

Fuse: 7-ampere AGC or 3AG (Littlefuse)

Connectors: Two (2) parallel-wired barrier strips⁴

- New 5-driver array design – optimized for smooth coverage at all frequencies
- Modular components for system design flexibility
- Bose-patented Acoustimass® enclosure
- Sleek, elegant design for architectural compatibility
- Full line of Bose-designed accessories for easy installation
- New electronic systems controller
- Available in two colors, plus paintable
- 502 BEX loudspeaker, the environmental version, is available for outdoor installations

¹ Full bandwidth pink noise is applied to the Panaray system digital controller and amplified to a level at the speaker terminals corresponding to the long-term rated power handling of the speaker. The average sound pressure level (dB-SPL) is measured at 1 meter from the speaker in an anechoic environment. The peak maximum acoustic output is the peak SPL possible with the maximum recommended amplifier power using musical program material.

² Full bandwidth pink noise is applied to the Panaray system digital controller and amplified to a level at the speaker terminals corresponding to one watt as referenced to the nominal impedance. The average sound pressure level (dB-SPL) is measured at 1 meter from the speaker in an anechoic environment.

³ Full bandwidth noise, meeting the International Electrotechnical Commission standard #268-5, is applied to the Panaray system digital controller and amplified to a voltage at the speaker terminals corresponding to the power handling of the speaker. The speaker must show no visible or measurable loss of performance after 100 hours of continuous testing.

⁴ International versions use XLR-type connectors.

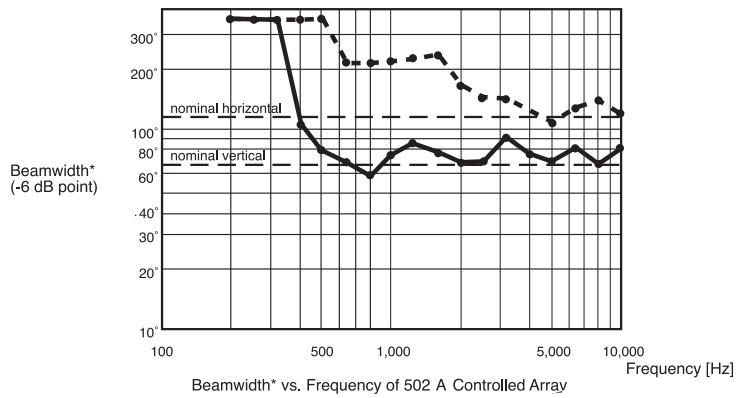
System Description

The Bose® Panaray® 502® system is a fully modular system which represents significant advances in loudspeaker array, low-frequency transducer, and system control technology. Components of the basic Panaray 502 system, which are sold separately, include two 502 A controlled arrays, one 502 B Acoustimass® enclosure, and one Panaray system digital controller. This basic system provides up to 122dB peak SPL (at 1 meter, driven with maximum recommended amplifier power) over the 55Hz to 15kHz range.

Extensive research has yielded new technology in array design which, using a proprietary arrangement of Bose 4.5-inch full-range drivers, results in tightly controlled horizontal and vertical beamwidth, and extremely smooth band-to-band directivity. The system also features a new, compact low-frequency enclosure using Bose-patented Acoustimass technology. The Panaray 502 system is a highly aesthetic voice or music sound reinforcement system for permanent audio installations in theaters, auditoriums, churches, nightclubs, transportation facilities, and other places where people gather to be entertained, enlightened, or informed.

Component Description

The 502 A controlled array is a mid-to high-frequency component of the Panaray 502 system. It features five new-design 4.5" (11.4 cm) helical voice coil drivers in a slim, elegantly designed enclosure. The result is natural sounding, extremely even coverage at all frequencies over the entire listening area.



*Beamwidth is the -6dB point, in each one-third octave band, on a polar plot representing the average within ten degrees of the horizontal and vertical planes about the array.

It can be used with either the 502 B Acoustimass enclosure for full-frequency sound reinforcement, or separately for voice-only reinforcement systems.

The 502 A controlled array is designed for installation in a variety of configurations, using its integral 10x safety-rated attachment points, and Bose suspension and mounting accessories. The baffle and rear panel are constructed of high-strength structural foam, and the speaker grille is constructed of a durable perforated steel. It is available in both Professional Gray and Arctic White, and both the enclosure and grille are fully paintable to match interior décor.

The 502 B Acoustimass enclosure uses a single high-power-handling, high-reliability 12" (30 cm) woofer. This new Bose-designed low-frequency transducer features a high-temperature, 4" (10.2 cm) voice coil, cast aluminum basket, and a high-durability rubber surround. The 502 B speaker provides clear, deep bass reinforcement from a small enclosure, using patented Bose Acoustimass speaker technology. Its low cross over frequency results in a non-

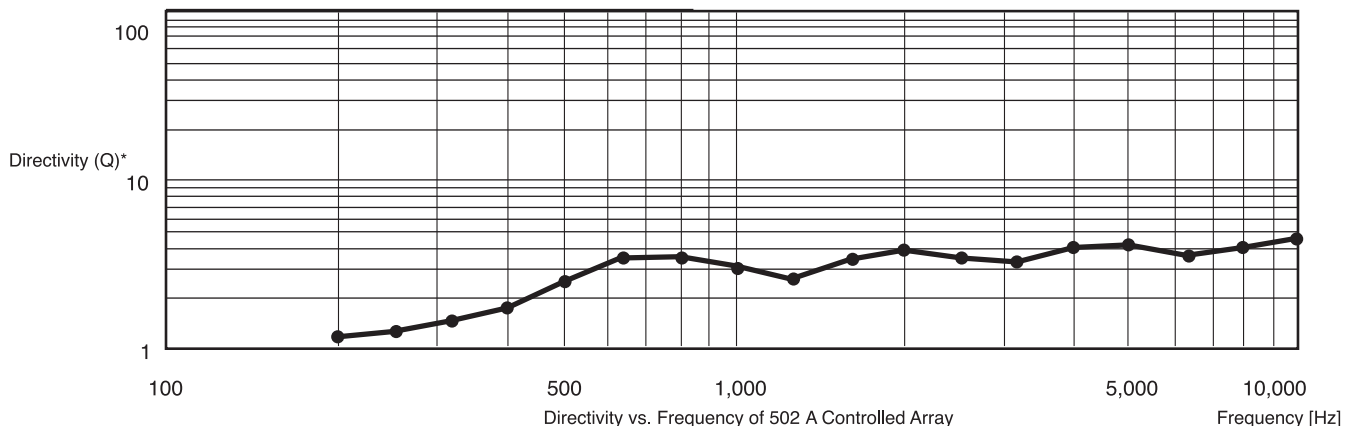
localizable sound source, which allows it to be unobtrusively installed apart from the 502 A arrays. The enclosure is fitted with 10x safety-rated attachment points (top and bottom) for mounting in a variety of orientations.

Two-point suspension is easy to accomplish using the Bose CSB-5B suspension bracket. The 502 B is available in both Professional Gray and Arctic White, and is covered with a scratch-resistant vinyl, which can be painted to match any décor.

The Panaray system digital controller is a single rack-space device which provides crossover functions, active electronic equalization, and dual-channel signal processing for both the 502 A and 502 B.

An optional plug-in card is available for Bose amplifiers, which allows 502 A controlled arrays to be combined in a sound-system design with the Acoustic Wave® Cannon™ system.

The Panaray 502 system includes a complete line of accessories for suspending or mounting both the 502 A and 502 B in a wide variety of configurations.



*Directivity is the ratio, in each one-third octave band, of the average response in the nominal 120° x 70° polar window, to the average response over the entire solid angle about the source.

System Configurations

The Bose® Panaray® 502® system provides a flexible, building-block approach to fit the sound reinforcement requirements of many types of applications, from nightclubs to cathedrals. Detailed installation and system design guidelines for the Panaray 502 system are provided in the *Panaray 502 System Owner's Guide*. For illustrative purposes, here are some typical system configurations:

Figure 1 shows a block diagram of the basic Panaray 502 system, consisting of one 502 B, two 502 A speakers, one Panaray system digital controller, and three channels of amplification for a stereo system. This system provides 115dB-SPL @ 1 m average acoustic output. Additional low-frequency output can easily be achieved by locating the cabinet against large hard surfaces.

Figure 2 illustrates how components can be added to the basic Panaray 502 system to achieve a variety of SPL or coverage requirements. One example of an expanded system would be a small disco dance area. In this application, four arrays at the outer corners of the dance floor, plus two 502 Bs on the floor adjacent to the dance area, will deliver approximately 118dB-SPL average, with 130dB-SPL peaks, and all components driven at maximum recommended amplifier power.

Figure 3 shows how the Panaray 502 components can be interconnected for a voice-only paging system. This system is ideal for applications where voice reinforcement is needed over a large area, such as an airport terminal or a train station. Through the use of the Bose CVT-5 Constant Voltage Transformer, multiple 502 As can be installed in a 70/100V constant voltage distributed system. (This system operates from 130Hz and above only, and is not recommended for use where music is an integral part of the program material.)

Warranty Information

The Bose Panaray 502 A controlled array and the 502 B and 502 BEX Acoustimass® enclosures are covered by a five-year, transferable limited warranty.

Figure 1: Basic Panaray system

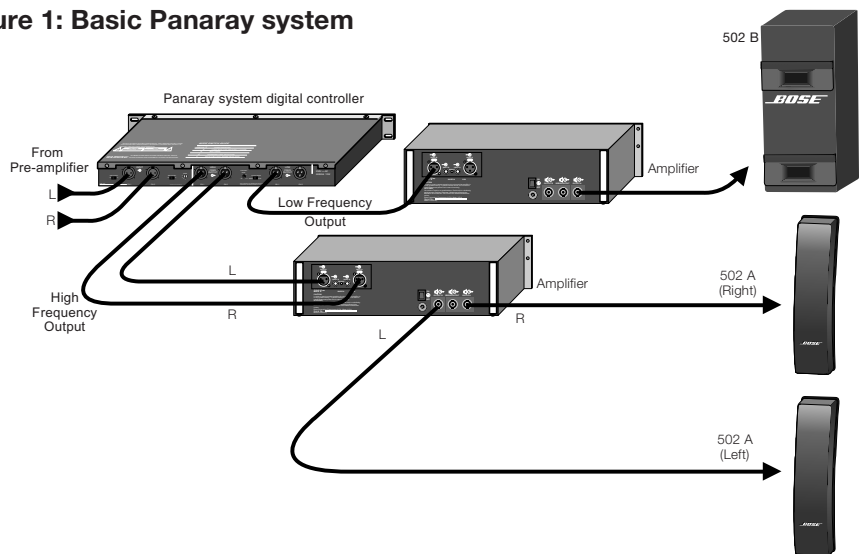


Figure 2: Expanded Panaray system

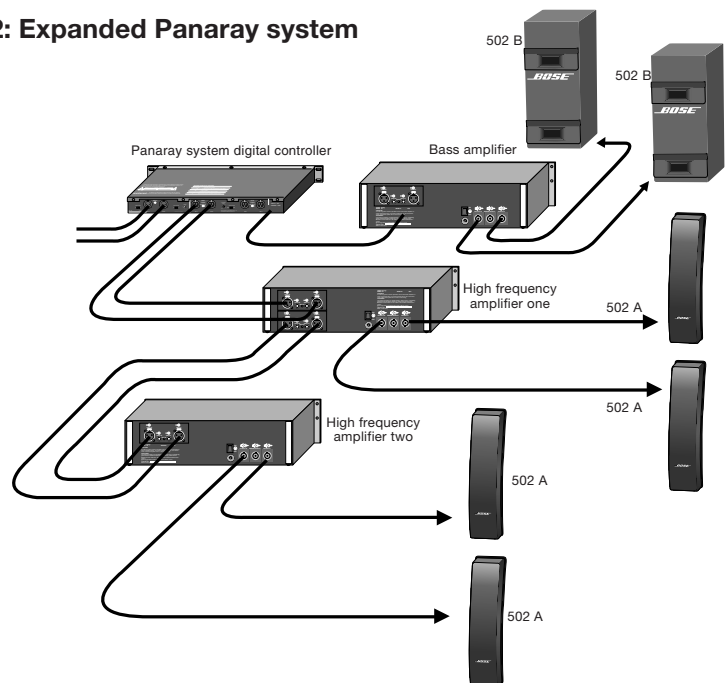
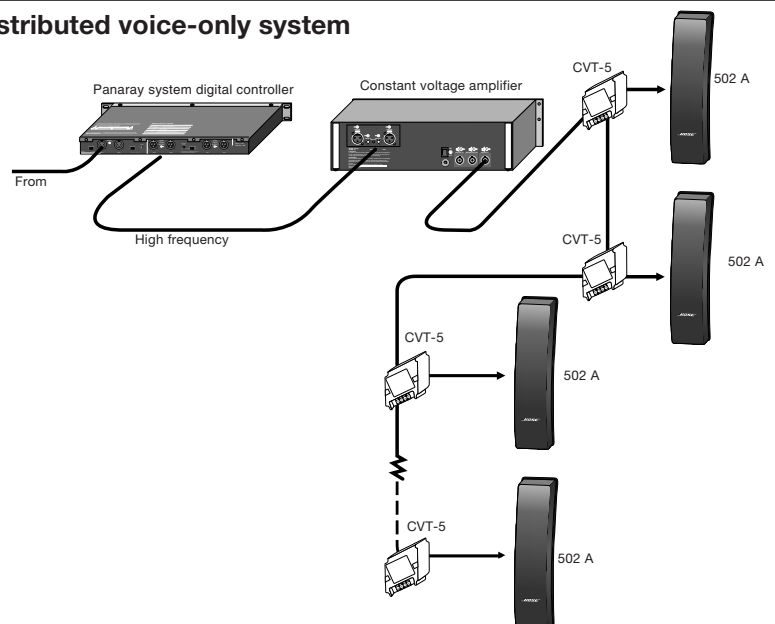


Figure 3: Distributed voice-only system

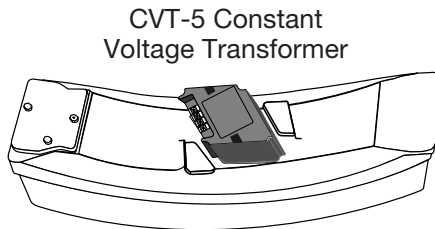


Panaray® 502® System Accessories

A full line of accessories has been specially designed by Bose for use with the Panaray® 502® system components. These accessories increase system configuration flexibility and provide simple solutions for typical installation challenges.

502 A Controlled Array Accessories

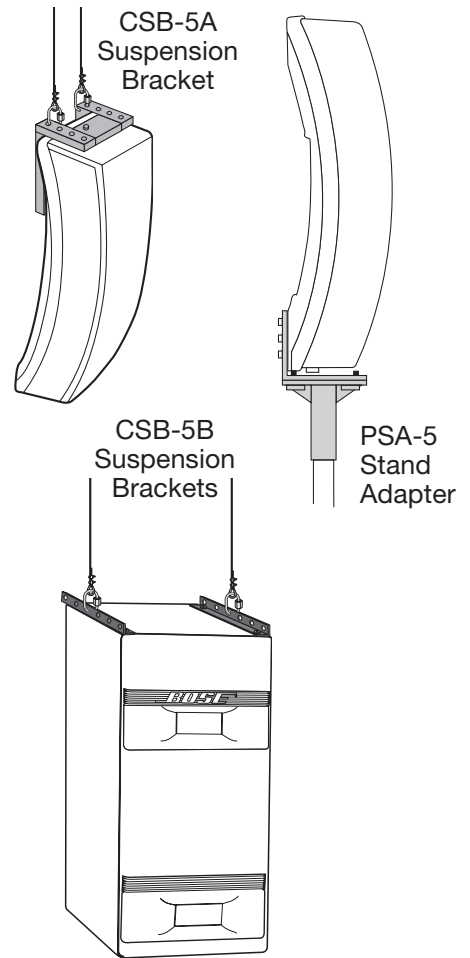
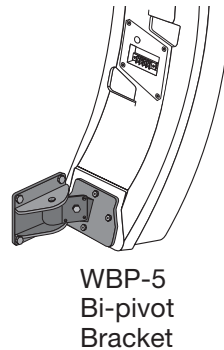
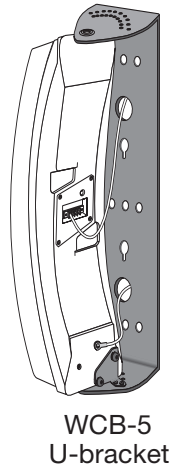
- CSB-5A Suspension Bracket (2-point gravitational type, 0° - 45° pitch range)
- WCB-5 U-bracket (for wall/ceiling surface mounting, ±90° range)
- WBP-5 Bi-Pivot Bracket (single-point surface mount, 0° - 45° pitch, ±80° yaw)



- CVT-5A Constant Voltage Transformer (70/100V distributed system transformer and housing)
- PSA-5 Stand Adapter (compatible with Bose SS5 and SS10 stands)

502 B and 502 BEX Acoustimass® Enclosure Accessories

- CSB-5B Suspension Bracket (2-point gravitational type, 0° - 30° pitch range)
- 502 A EQ Card (not shown)
- Options for active equalization



Engineers' and Architects' Specifications

502 A Controlled Array

The mid- to high-frequency device shall be a multiple-driver system with matched active equalization as follows:

The transducer complement shall consist of five (5) high-sensitivity drivers of 4.5 inches (11.4 cm) diameter, mounted vertically on a single baffle assembly such that directional characteristics are optimized for smooth response.

The input connector, located on the rear of the array enclosure, shall consist of a screw-type barrier strip.

The array enclosure shall be composed of copolymer materials, with outer dimensions of 23.5"H x 5.75"W x 6.76"D (59.7 cm H x 14.6 cm W x 17.1 cm D); its weight shall be 15 lb (6.8 kg).

The array maximum acoustic output shall be 112dB-SPL from 130Hz to 15kHz, with measurements referenced to full-bandwidth pink-noise input at 1 meter at the array's rated

power. Its power-handling capacity shall be 150W continuous referenced to IEC noise for 100 hours. The nominal horizontal beamwidth shall be 120°. The nominal vertical beamwidth shall be 70°.

The loudspeaker shall be the Bose® Panaray 502A controlled array.

502 B and 502 BEX Acoustimass Enclosure

The low-frequency device shall be a dual-ported highly compact enclosure with matched active equalization as follows:

The transducer complement shall consist of one (1) high-power-handling driver of 30 cm diameter, mounted inside an enclosure such that distortion is minimized as a result of acoustic filtering. Its operating frequency range shall be below 150Hz so that non-localizability shall allow a high degree of location placement flexibility.

The input connector, located on the rear of the enclosure, shall be a screw-

type barrier strip.

The enclosure shall be made of high-strength, high-density resin-impregnated vinyl-wrapped particle board, with outer dimensions of 31.0"H x 14.0"W x 15.5"D (78.7 cm H x 35.6 cm W x 39.4 cm D); its weight shall be 85 lb (38.6 kg).

The bass enclosure's maximum acoustic output shall be 115dB-SPL from 55Hz to 150Hz, with measurements referenced to a full-bandwidth pink-noise input at 1 meter at the enclosure's rated power. Its power-handling capacity shall be 450W continuous referenced to IEC noise for 100 hours.

The bass enclosure shall be the Bose Panaray 502 B Acoustimass enclosure.

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