



# Cardioid Bass Loudspeaker



## The Clear Voice™ SB-Series

The Clear Voice™ SB-Series of Sub Bass speaker enclosures are designed for use with any of the A-8, A-9, and A-12 surface planar arrays or the MTM-1 two-way compact line array when significant bass output is needed between 50 and 200 Hz. When paired with the arrays, the SB speakers seamlessly matches the sonic clarity of the arrays with articulate bass and a very fast transient response. For applications requiring extended low frequency power and punch below 50Hz, our VFL series of sub-bass cabinets are the perfect match. Every SB speaker utilizes a proprietary cabinet design that passively produces a cardioid dispersion pattern resulting in nearly 20 dB of attenuation on the rear side of the enclosure. This reduction in low frequency energy significantly improves the sound clarity for those musicians and singers on stage who are located under or behind the arrays. Refer to page 2 for more details about the cardioid dispersion.

SB-series enclosures can be arranged as ground stacks or flown arrays and are designed to be positioned adjacent to any configuration of arrays. Enclosures are built from 13 ply Baltic Birch wood and incorporates all necessary rigging hardware to attach multiple cabinet together. Rigging hardware that includes upper and lower grids for overhead flying and an adjustable rigging foot for ground stacking configurations are available as specified accessories.

■ Contact your PCSC Representative for more details: [sales@1pcsc.com](mailto:sales@1pcsc.com)

### Power and Punch Below 50Hz

For applications requiring low frequency, the SB-Series of sub bass loudspeakers are a perfect match to the MTM-1 Speaker.

### Ideal Applications:

- Indoor Venues - Large or Small
- Outdoor Venues - Large or Small
- Auditoriums, Conference Halls
- Concert Halls and Music Venues
- Forums, Arenas, Sports Centers
- Churches / Multipurpose Rooms
- Ground Stacking
- Flown Arrays
- Limited Spaces - Small Footprint
- Temporary Cinema Setups
- Stereo or Surround Sound Setups

### SB-Series Features:

- Cardioid Dispersion
- Nearly 20 db of Attenuation
- Extended Low Frequency Power
- Proprietary Cabinet Design
- Powerful Clarity in a Small Footprint
- Exceptional Musical Fidelity Output
- 13 ply Baltic Birch Wood
- Integrated Rigging Systems and Adjustment Cams for Multi-Configurations

## SB-Series Technology:

The SB-Series is a unpowered companion loudspeaker to the A-8, A-9, A-12, and MTM-1, that is optimized for operation between approximately 50 to 200 Hz. When bi-amped with these planar systems, the SB speakers seamlessly combine to produce an ultra fast bass response and exceptional tonal accuracy in this two octave range.

The SB-Series consist of 3 model: the SB-112C (with one 12" driver), SB-212C (with two 12" drivers), and the SB-412C (with four 12" drivers). All of the speakers utilize the same ultra-low distortion, very long throw excursion

12 inch transducer. A high pass filter at 50-60 Hz with a 24 dB/octave L/R slope is recommended for all SB systems.

The rigging system integrated into each cabinet contains all rigging points and adjustment cams allowing each enclosure to be vertically splayed from 0° to 10°. The array's SPL output and coverage patterns are determined by the number of cabinets in the array. Refer to the following chart for performance specifications. Actual output is subject to environmental and atmospheric conditions and may vary from the stated specification.

## SB-Series Specifications

Speaker Models	SB-112C	SB-212C	SB-412C
Number of Transducers	1	2	4
Horizontal Dispersion	100° at 100 Hz	120° at 100 Hz	120° at 10 KHz
Vertical Dispersion	4 rows = 90° at 100 Hz 8 rows = 60° at 100 Hz	4 rows = 90° at 100 Hz 8 rows = 60° at 100 Hz 12 rows = 40° at 100 Hz	4 rows = 90° at 100 Hz 8 rows = 60° at 100 Hz 12 rows = 40° at 100 Hz
Power Handling Capacity per Speaker	250 Watts RMS	500 Watts RMS	1,000 Watts RMS
Speaker Sensitivity	97 dB 1w/1m; with 4 boxes	100 dB 1w/1m; with 4 boxes	103 dB 1w/1m; with 4 boxes
Nominal Impedance per Speaker	3 Ohms	6 Ohms	3 Ohms
Useful Frequency Response	55 Hz-300 Hz / ± 3 dB (Equalized)	55 Hz-300 Hz / ± 3 dB (Equalized)	45 Hz-300 Hz / ± 3 dB (Equalized)
Weight per Speaker	45 lbs.	75 lbs.	150 lbs.
Dimension per Speaker H x W x D in Inches	14.3 x 14.3 x 22	14.3 x 27 x 22	14.3 x 53.5 x 22
Cam Intervals for Vertical Splay Adjustment	0°, 2.5°, 5°, 7.5°, 10°	0°, 2.5°, 5°, 7.5°, 10°	0°, 2.5°, 5°, 7.5°, 10°
High Pass Filter for Array Without Subwoof Speakers	Four boxes = High Pass at 60 Hz, 24 dB-LR slope, Eight boxes = High Pass at 55 Hz, 24 dB-LR slope	Four boxes = High Pass at 60 Hz, 24 dB-LR slope, Eight boxes = High Pass at 55 Hz, 24 dB-LR slope	Four boxes = High Pass at 60 Hz, 24 dB-LR slope, Eight boxes = High Pass at 55 Hz, 24 dB-LR slope
X'over with A-Series or MTM-1 Planar Line Array	X'over Freq. between SB-112C & MTM-1 = 180-210 Hz; 48 db- LR slope	X'over Freq. between SB-212C & MTM-1 = 180-210 Hz; 48 db-LR slope	X'over Freq. between SB- 412C & A-Series = 150-200 Hz; 48 db-LR slope
Input & Thru Connector	Speakon NL4 x 2; 1+ & 2+ wired in parallel, 1- & 2- wired in parallel		
System Rigging	All rigging is constructed certified to international rigging standards		
Supplied Accessories	Rigging Pins and Splay Cams		
Optional Accessories	Road Case for SB-112C, Caster Board for SB-212C and SB-412C, Upper Fly Grid, Lower Pullback Bar, Ground Stack Support Foot, System DSP (preloaded with processing parameters), Amplification, Speaker Cables		

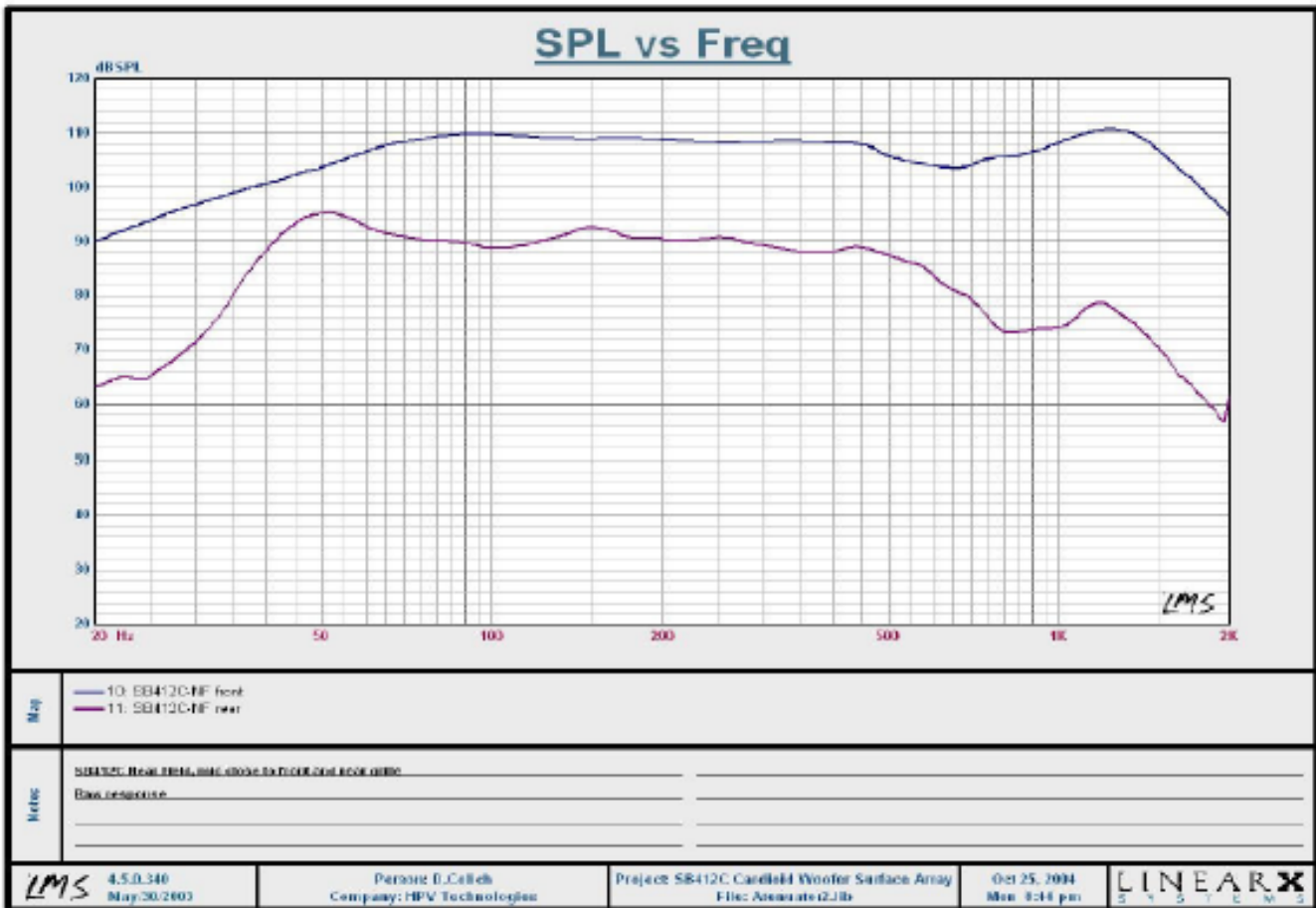
## Cardioid Bass Dispersion:

As a cone transducer moves back and forth, it creates sound on both sides of the diaphragm with equal intensity... but opposite phase. Sound waves from the front and rear excursions that meet at the sides of the transducer and are cancel out. This creates a typical dipole or figure-of-eight dispersion pattern.

This property can be manipulated in applications where sound is not desired on the sides or rear of the speaker. If a dipole transducer is mounted in a closed cabinet, it becomes monopole and radiates only from the front. In the low frequency range, a monopole becomes omni-directional (i.e., radiates sound all around the speaker with equal intensity). This may produce an excessive amount of energy at the sides or rear of the speaker. However,

if an open enclosure is used and the rear waves are absorbed, the transducer becomes cardioid. Cardioid dispersion keeps sound cancellation on its sides with greatly reduced rear radiation.

The following graph illustrates the SPL attenuation versus frequency on the SB-412C cardioid bass cabinet. The top graph is the frequency response measured at the front of the cabinet and the bottom graph is the response measured from the cabinet's back. Notice that between 60 and 200 Hz. the volume at the back of the cabinet is ~15 dB to 19 dB lower than at the front. In a concert setting, this attenuation can dramatically reduce the volume of low frequency energy which would typically wash over a stage or performance area.



Contact your PCSC Representative for more details on Audio Platforms: [sales@1pcsc.com](mailto:sales@1pcsc.com)