FreeSpace® DS 100SE
Loudspeakers

TECHNICAL DATA SHEET

Product Overview

The Bose® FreeSpace® DS 100SE loudspeakers are high-performance, surface-mount loudspeakers designed for foreground music and speech reproduction in a wide range of commercial applications, including retail, restaurant and hospitality establishments.

These 100-watt loudspeakers can be installed up to 30ft (10m) high, both indoors and outdoors. The contemporary styling easily blends with a wide variety of décors. Horizontal or vertical mounting options offer installation flexibility. The DS 100SE loudspeakers meet numerous standards for combination music and evacuation systems around the world when used with the optional junction boxes.

Product Information

The FreeSpace DS 100SE surface-mount loudspeakers are engineered for installation on walls and other solid surfaces. Simple 1→2→3 installation: (1) Wire and attach the wall bracket (2) Secure the loudspeaker to the wall bracket with one screw (3) Snap the wire connector into the wall bracket. The included bracket allows for horizontal or vertical mounting positions, each with either pitch or yaw adjustment.

The DS 100SE loudspeakers can be used as 8-ohm, 100-watt loudspeakers or as 70/100V loudspeakers. An easy-to-access thumb wheel allows taps to be set quickly and simply without the use of tools.

Two Twiddler® drivers in a proprietary Articulated Array® loudspeaker design provide a 180° H x 75° V dispersion pattern out of the box when loudspeakers are mounted horizontally. The array can be rotated easily to maintain this wide horizontal dispersion pattern when the loudspeakers are installed in the vertical orientation.

Performance of the FreeSpace DS 100SE loudspeakers can be maximized through the use of the recommended Bose loudspeaker equalization resident in select Bose electronics or by using other equipment with parametric equalization. The loudspeakers can be used out of the box with a 55-Hz high-pass filter when recommended loudspeaker equalization is not used. The DS 100SE loudspeakers are acoustically compatible with DS 100F flush-mount loudspeakers and can be integrated on the same loudspeaker line.

Key Features

- Maximum SPL of 105 dB-SPL (peak 111 dB-SPL)
- Full-range performance from 65 Hz to 16 kHz
- 180° H x 75° V coverage pattern (out of the box, when loudspeakers are mounted horizontally)
- Two 2.25" (57mm) Twiddler drivers in a proprietary Articulated Array loudspeaker design and a separate 5.25" (133mm) driver
- Simple 1→2→3 installation
- Pitch or yaw adjustment options:
  Horizontal mount: maximum pitch 45° or maximum yaw 30°
  Vertical mount: maximum pitch 30° or maximum yaw 45°
- Integrated multi-tap transformer provides easy-to-change tap settings without tools:
  70V – 12.5W, 25W, 50W, 100W
  100V – 25W, 50W, 100W
- Can be used as an 8Ω, 100W loudspeaker
- Can be used indoors and outdoors and can be painted
- Listed to ANSI/UL 1480-2005

Applications

The FreeSpace DS 100SE loudspeakers are well-suited for permanent installations at:

- Retail stores
- Transportation facilities
- Hospitality venues
- Concourses
- Restaurants
- Houses of worship

TECHNICAL DATA SHEET

Detailed Product Specifications

Power handling[1]	100W
Nominal Impedance (transformer bypass)	8Ω
Sensitivity[2] (at 1W @ 1m)	85 dB-SPL
Maximum SPL[3] (pink noise @ 1m @ rated power)	105 dB-SPL 111 dB-SPL (Peak)
Frequency range[4] (-3 dB)	65 Hz – 16 kHz
Beamwidth (-6 dB point, average 1– 4 kHz)	180° H x 75° V

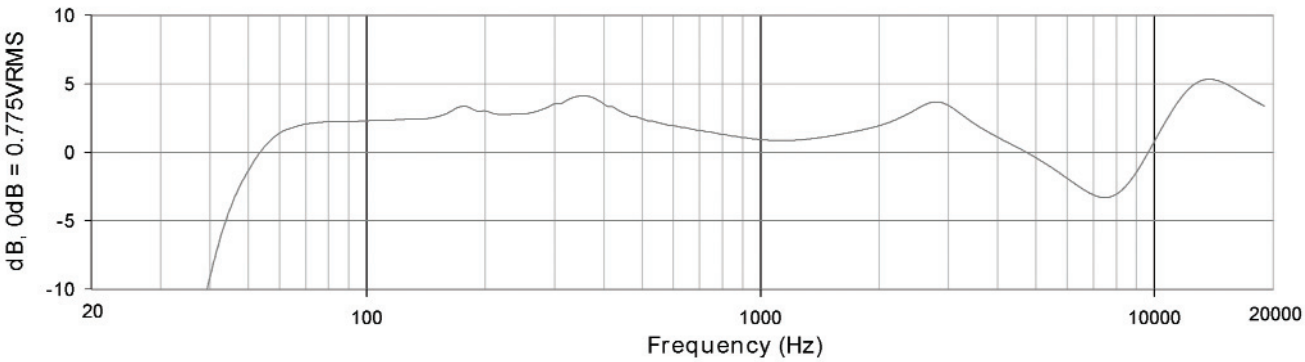
[1–4] See "How our Loudspeakers are Measured" on page 7.

Additional Product Information

This product is equipped with a protection circuit that will reduce the high frequencies to an audibly lower level when the loudspeaker is overdriven. In the event the protection circuit is activated, reduce the input level.

Performance of the FreeSpace® DS 100SE loudspeakers can be maximized through the use of the recommended Bose® loudspeaker equalization resident in select Bose electronics or by using other equipment with parametric equalization. The loudspeakers can be used out of the box with a 55-Hz high-pass filter when the recommended loudspeaker equalization is not used.

Recommended Loudspeaker Equalization Curve



FreeSpace® DS 100SE
Loudspeakers

Driver complement:
Two 2.25" (57mm) Twiddler® drivers in an Articulated Array® loudspeaker design
One 5.25" (133mm) woofer

Construction features:
Enclosure: Injection-molded polypropylene
Grille: Powder-coated steel

Dimensions:
Loudspeaker only:
8.5"D x 15"W x 7"H
(216mm x 381mm x 178mm)
Loudspeaker with bracket:
10.9"D x 15"W x 7"H
(276mm x 381mm x 178mm)

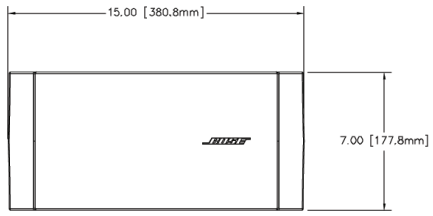
Weight:
Product: 13.4lb (6kg)
Shipping: 16lb (7.3kg)

Package contents:
Loudspeaker, mounting bracket and installation guide

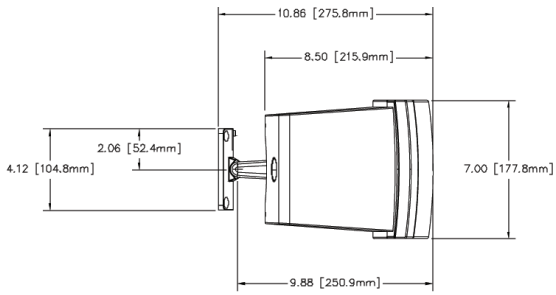
Finish:
Textured black or white finish with a contoured, powder-coated steel grille. Both the enclosure and grille can be painted.

Connectors:
The included mounting bracket features a three-terminal barrier strip. Optional junction boxes provide a pre-wired ceramic connector and a thermal fuse for use when required.

Mechanical diagrams:



Front View



Side View

Design Recommendations

When creating a design that uses the FreeSpace® DS 100SE loudspeakers, you should consider the following:

- Recommended mounting height is between 8 and 26ft (2.4 and 8m).
- Provide at least 20ft (6.1m) of space between adjacent loudspeakers for typical applications.
- In outdoor applications, do not space the loudspeakers by more than 50ft (15.2m).
- Generally, the FreeSpace DS 100SE loudspeakers should be pitched downward between 5 and 15 degrees.
- Maximum SPL for a typical application is between 91 and 98 dB-SPL.
- Always add 25% headroom to your amplifier to accommodate various types of program material.

Use the following recommended loudspeaker spacing guidelines for typical mounting heights between 12 and 22ft (3.6 and 6.7m), as coverage requirements and loudspeaker spacing will vary.

Coverage	Loudspeaker Spacing Distance
Premium	40ft | 12m
Standard	50ft | 15m
Minimum	55ft | 17m

Total system SPL varies based on the mounting height, tap setting and room acoustics. For typical applications, use the chart below to determine the total SPL.

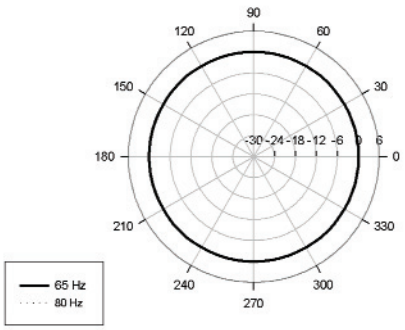
DS 100SE												
Mount Height	m	2.4	3.0	3.6	4.2	4.8	5.5	6.1	6.7	7.3	8.0	10.0	
	ft	8	10	12	14	16	18	20	22	24	26	32	
TAP (W)	12.5*	89	88	88	87	86	85	84	83	83	82	80	dB-SPL
	25	92	91	91	90	89	88	87	86	86	85	83	
	50	95	94	94	93	92	91	90	89	89	88	86	
	100	98	97	97	96	95	94	93	92	92	91	89	

*12.5-watt tap available only in 70V mode.

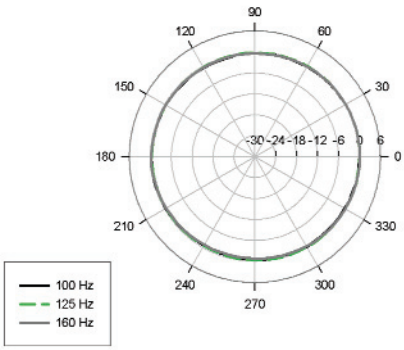
For more detailed information, refer to the DS 100SE loudspeakers Design Guide.

Polar Plots ⅓ Octave Horizontal

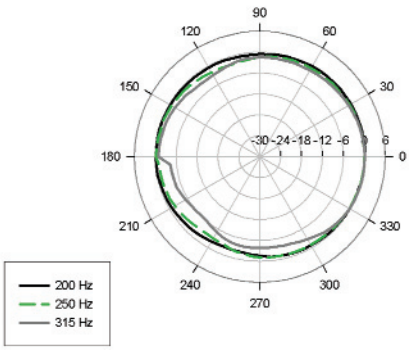
63 Hz Octave Band



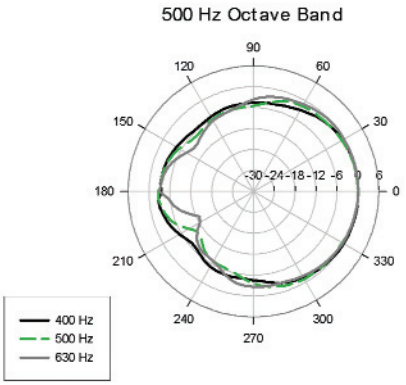
125 Hz Octave Band



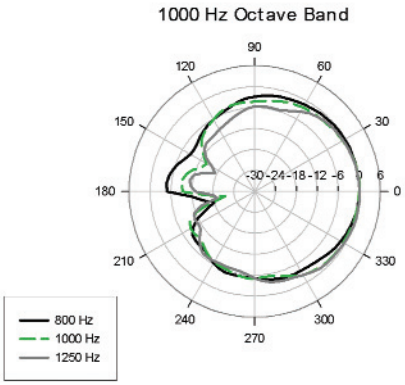
250 Hz Octave Band



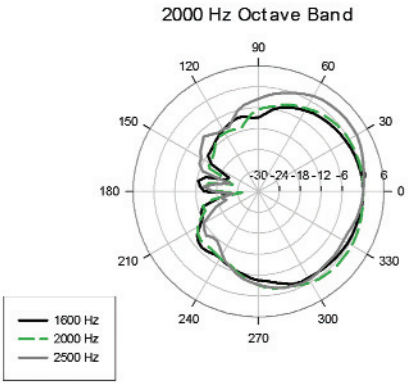
500 Hz Octave Band



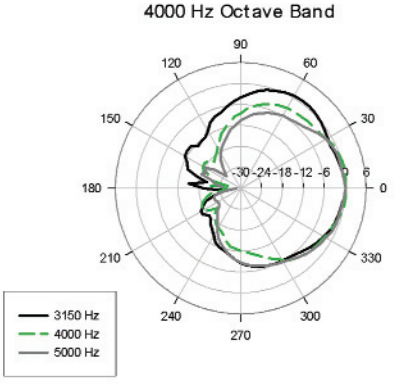
1000 Hz Octave Band



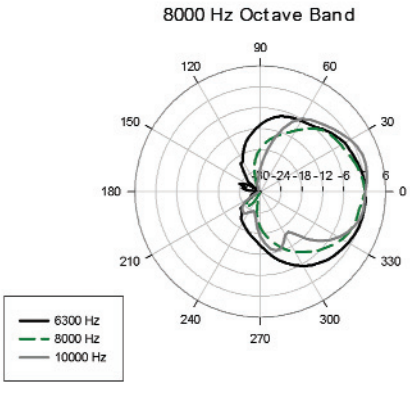
2000 Hz Octave Band



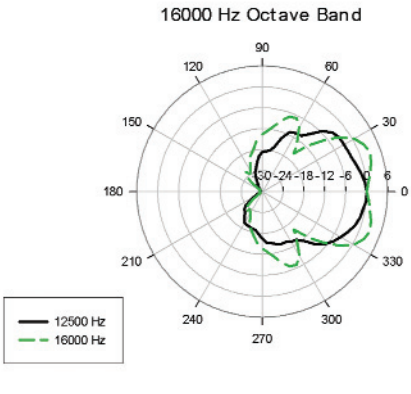
4000 Hz Octave Band



8000 Hz Octave Band

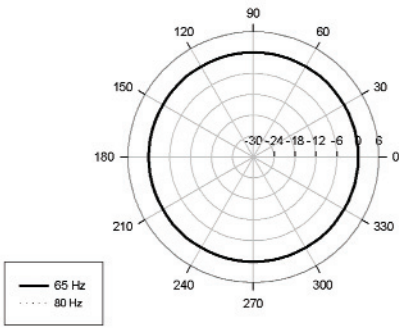


16000 Hz Octave Band

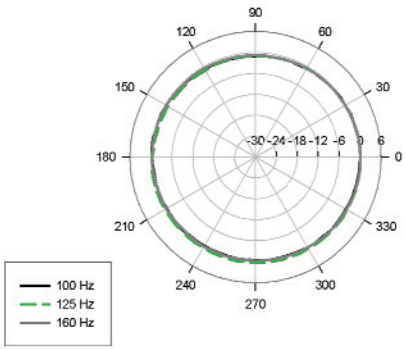


Polar Plots ⅓ Octave Vertical

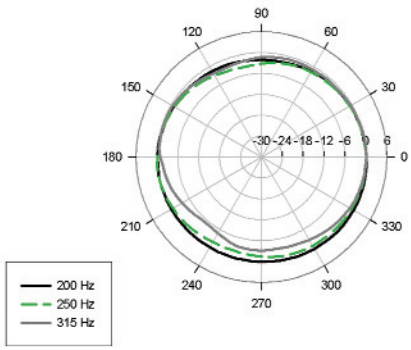
63 Hz Octave Band



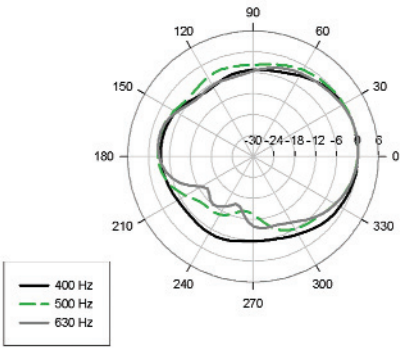
125 Hz Octave Band



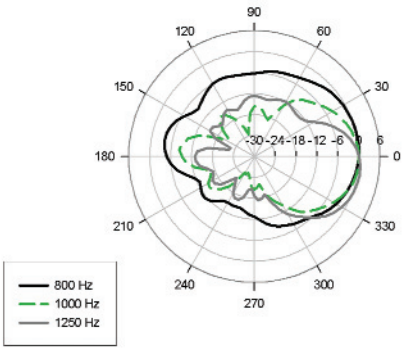
250 Hz Octave Band



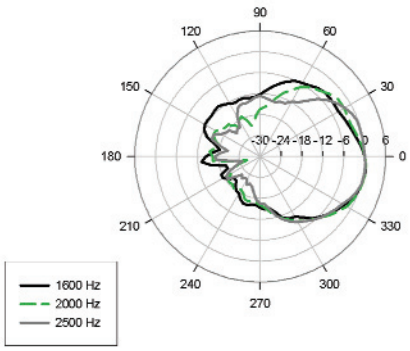
500 Hz Octave Band



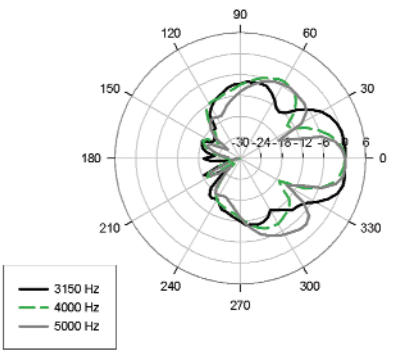
1000 Hz Octave Band



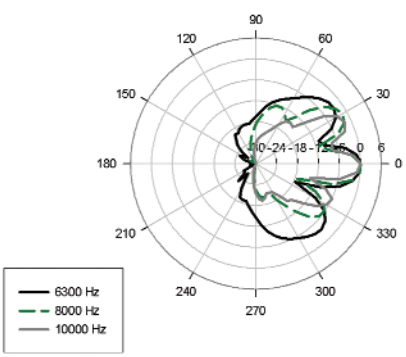
2000 Hz Octave Band



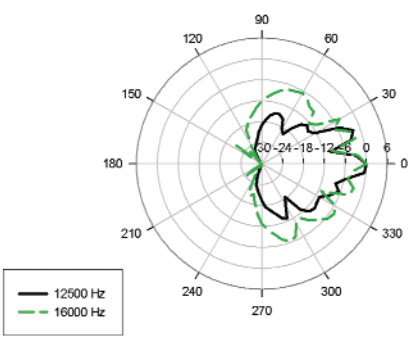
4000 Hz Octave Band



8000 Hz Octave Band



16000 Hz Octave Band



TECHNICAL DATA SHEET

Engineers' and Architects' Specifications

Each loudspeaker shall be a 100-watt, ported loudspeaker system utilizing two 2.25" (57mm) mid-high frequency drivers mounted vertically on a rotatable, faceted baffle and a separate 5.25" (133mm) woofer. The loudspeaker shall be used for installation on walls and other flat, solid surfaces.

Each loudspeaker shall have a nominal rated impedance of 8 ohms and shall be wired in parallel with a line voltage matching (step-down) transformer with an accessible, front-mounted level selector appropriate for setting various output taps. The loudspeaker input connections will allow for direct connection to either 70V, 100V or low-impedance amplifiers.

Exposed cosmetic surfaces of the loudspeaker shall be paintable, and the acoustically transparent grille component shall be formed of powder-coated steel.

Each loudspeaker shall have a bandwidth of 65 Hz – 16 kHz and a maximum acoustic output of 105 dB-SPL referenced to a full bandwidth pink noise input at 1 meter at the loudspeaker's rated power. The input connection shall consist of a three-position barrier connector on the included mounting bracket. Each loudspeaker shall be wired to the mounting bracket via a 4-pin, pre-wired connector.

Power settings available shall be: 12.5W, 25W, 50W, 100W @ 70V; 25W, 50W, 100W @ 100V; and 100W @ 8Ω (when referenced to IEC noise for 100 hours). The nominal dispersion shall be 180° H x 75° V at -6 dB (average 1 – 4 kHz).

When used with optional junction boxes, which include a pre-wired ceramic connector and a thermal fuse, the loudspeaker shall meet numerous standards for combination music and evacuation systems around the world.

The loudspeakers shall be the Bose® FreeSpace® DS 100SE loudspeakers.

Safety and Regulatory Compliance

The FreeSpace DS 100SE loudspeakers have passed extensive testing and comply with the following specifications and uses:

Listed to ANSI/UL 1480-2005

- Fire Protective Signaling Use – UL Category UUMW, File Number S 3241.
  Control Number 42S9 when installed with a junction box (on-wall or in-wall).
  Not for use with DC-supervised systems.
- General Purpose Use – UL Category UEAY, File Number S 5591 Control Number 3N89.
- The DS 100SE is suitable for use outdoors in wet locations.
- Suitable for installation using Class 1, Class 2 or Class 3 wiring methods in accordance with NFPA 70, *National Electric Code,* 2002, Article 640.
- Suitable for use with fire alarm circuit wiring methods in accordance with NFPA 70, *National Electric Code,* 2002, Article 760.
- EMC Directive 89/336/EEC and Article 10 (1) of the directive, EN50081-1 and EN50082-1 as signified by the CE mark.

The DS 100SE loudspeakers also have been designed to the requirements defined in the following European regulatory specification for combination systems:

- British Standard Code of Practice BS 5839, Part 8.
- Tested to IEC60268-5.

Limited Warranty

The FreeSpace DS 100SE loudspeakers are covered by a five-year transferable limited warranty.

Product Codes

FreeSpace DS 100SE loudspeaker-Blk	PC 040806
FreeSpace DS 100SE loudspeaker-Wht	PC 040807

Accessories

On-Wall junction box (6 pack)-Blk	PC 041865
On-Wall junction box (6 pack)-Wht	PC 041866
In-Wall junction box (6 pack)-Blk	PC 041867
In-Wall junction box (6 pack)-Wht	PC 041868

Replacement Parts

Speaker bracket-Blk	PN 295891-001
Speaker bracket-Wht	PN 295891-002
Speaker arm w/screw-Blk	PN 299564
Speaker arm w/screw-Wht	PN 299565
Grille w/fasteners-Blk	PN 299558
Grille w/fasteners-Wht	PN 299559
Logo-Blk	PN 303038-001
Logo-Wht	PN 303038-002
Endcap-Blk	PN 299568-001
Endcap-Wht	PN 299568-002
2.25" (57mm) driver w/gasket	PN 299562
5.25" (133mm) woofer w/gasket	PN 299563

How our Loudspeakers are Measured

1. Power handling
Full-bandwidth pink noise, meeting the IEC Standard #268-5, is applied to the loudspeaker and amplified to a level at the loudspeaker terminals corresponding to the power handling of the loudspeaker. The loudspeaker must show no visible damage or measurable loss of performance after 100 hours of continuous testing.

2. Sensitivity
Full-bandwidth pink noise is applied to the loudspeaker with its active equalization curve and amplified to a level at the loudspeaker terminals corresponding to 1 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. Maximum SPL
Full-bandwidth pink noise is applied to the loudspeaker with its active equalization curve and amplified to a level at the loudspeaker 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.

4. Frequency range
Sine waves are injected into the loudspeaker, and the level is adjusted to 1 watt, as referenced to the nominal impedance, and the level measured at 1 meter. Resulting graph is smoothed by 0.05 octave-band.

BOSE®
Better sound through research®