

FreeSpace® DS 16S / 16SE loudspeaker



Key Features

- **Full-range** loudspeaker with a single 2.25" (57 mm) full-range driver in a ported enclosure designed for surface mounting in background music and paging applications
- **Simple 1->2->3** installation system. Mounting hardware allows for horizontal and vertical orientation with adjustable pitch or yaw
- **Integrated multi-tap transformer** with innovative thumb wheel adjustment for easy-to-change tap settings from under front end cap
- **Shared voicing** across entire FreeSpace DS product family enables DS 16, DS 40 and DS 100 loudspeakers to be integrated on the same system and maintain consistent tonal quality
- **Can be combined** with either surface or flush-mount FreeSpace 3 Acoustimass® module for extended bass response
- **Supported** by a suite of accessories, including wall-mount bracket, ceiling-mount bracket, pole-mount bracket and junction boxes



TECHNICAL DATA SHEET

Product Overview

The Bose® FreeSpace DS 16S and DS 16SE are the entry-level members of the DS loudspeaker family. They are high-performance, full-range, surface-mount loudspeakers designed for background music and speech reproduction in a wide range of installed applications. Both feature a broad 170° x 160° coverage pattern and frequency response down to 80 Hz.

Technical Specifications

| System Performance | | |
|--|--|--------------------|
| Frequency Response (+/-3 dB) ¹ | 95 Hz - 17 kHz | |
| Frequency Range (-10 dB) ¹ | 80 Hz - 19 kHz | |
| Nominal Dispersion | 170° H x 160° V | |
| Recommended High-Pass Filter | 80 Hz high-pass filter | |
| Loudspeaker EQ | Recommended | |
| Long-Term Power Handling ² | 16 W (64 W peak) | |
| Sensitivity (SPL / 1 W @ 1 m) ³ | 84 dB SPL | |
| Maximum SPL @ 1 m ⁴ | 96 dB SPL (102 dB SPL peak) | |
| Nominal Impedance | 8 Ω (transformer bypassed) | |
| Transformer Taps (70/100 V) | 70 V: 1 W, 2 W, 4 W, 8 W, 16 W 100 V: 2 W, 4 W, 8 W, 16 W | |
| Transducers | | |
| Driver Compliment | 2.25" (57 mm) full-range driver | |
| Physical | | |
| Enclosure | PC/ABS (white), polypropylene (black); textured | |
| Grille | Powder-coated steel grille | |
| Environmental | DS 16S: Indoor use only DS 16SE: Outdoor per IEC 529 IP55 | |
| Connectors | Three-terminal barrier strip integrated on included mounting bracket. Optional accessories available for use when ceramic connector and thermal fuse are required. Wire gauge: 18 AWG (0.8 mm) to 14 AWG (2.0 mm) | |
| Suspension / Mounting | Included bracket allows for horizontal or vertical mounting positions, each with either pitch or yaw adjustment. Hole on rear of enclosure sized for #8 or M4 self-tapping screw for use with safety chain. | |
| Dimensions | 4.9" H x 9.9" W x 4.6" D (124 mm x 250 mm x 117 mm) Depth with wall mount bracket: 6.4" (161 mm) | |
| Net Weight | 4.0 lb (1.8 kg) | |
| Shipping Weight | 5.1 lb (2.3 kg) | |
| Product Code | | |
| | FreeSpace® DS 16S | FreeSpace® DS 16SE |
| Black | 040783 | 040785 |
| White | 040784 | 040786 |

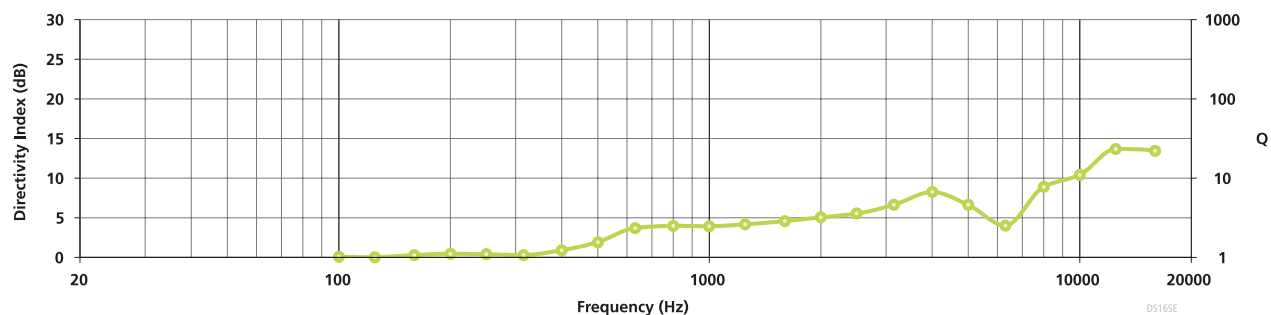
Footnotes:

- ¹ Frequency response and range measured on-axis with recommended active EQ in an anechoic environment.
- ² Power handling tested using pink noise filtered to meet IEC 268-5, 6 dB crest factor, 100 hours, with recommended EQ.
- ³ Sensitivity measured in free field (no boundary-loading gain) with recommended active EQ, referenced to 1W/1m.
- ⁴ Maximum SPL calculated from sensitivity and power handling specifications, exclusive of power compression.

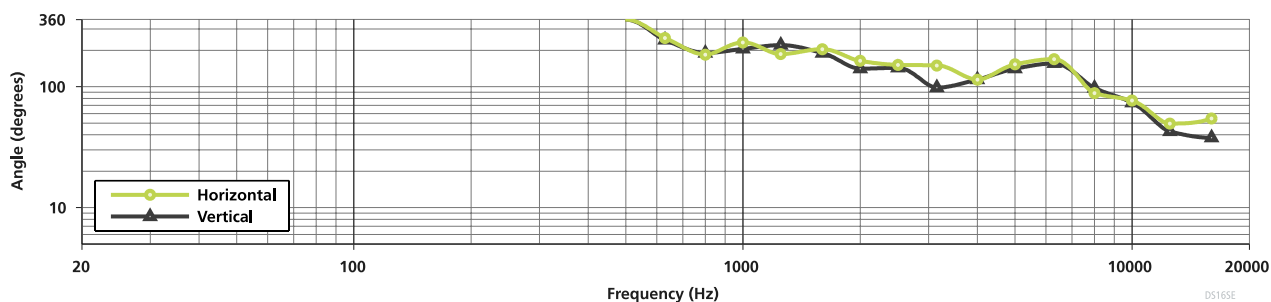
FreeSpace® DS 16S / 16SE loudspeaker



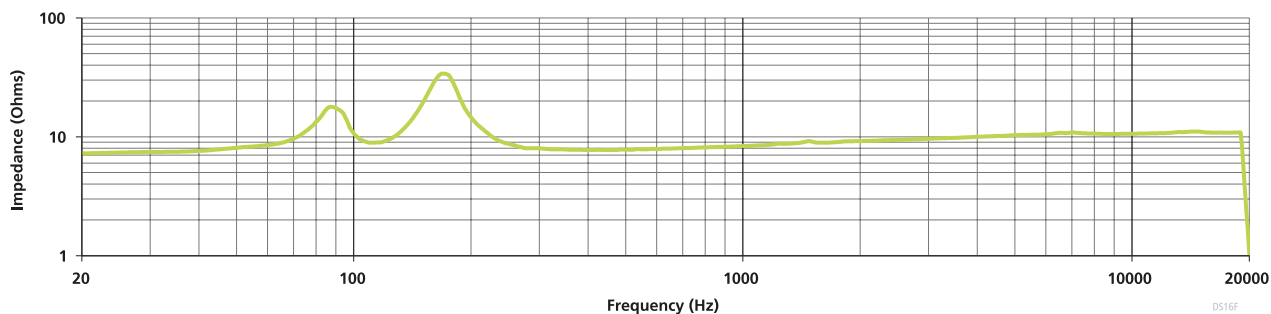
Directivity Index and Q



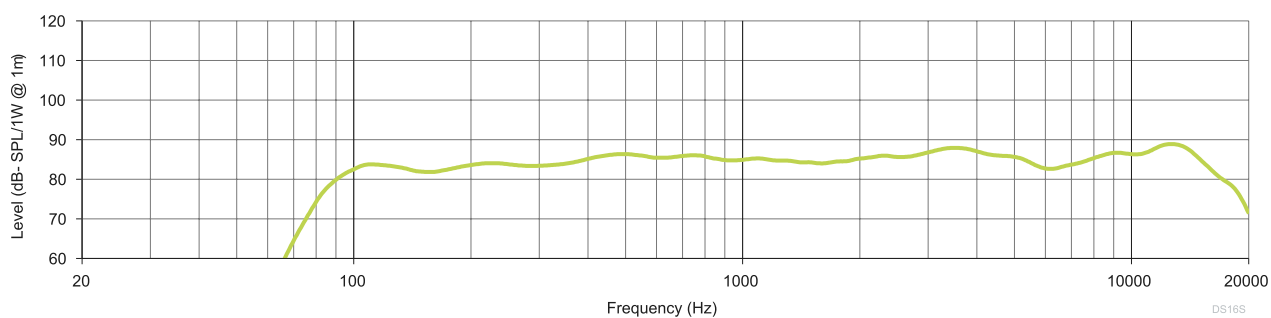
Beamwidth



Impedance



On-Axis Response



FreeSpace® DS 16S / 16SE loudspeaker

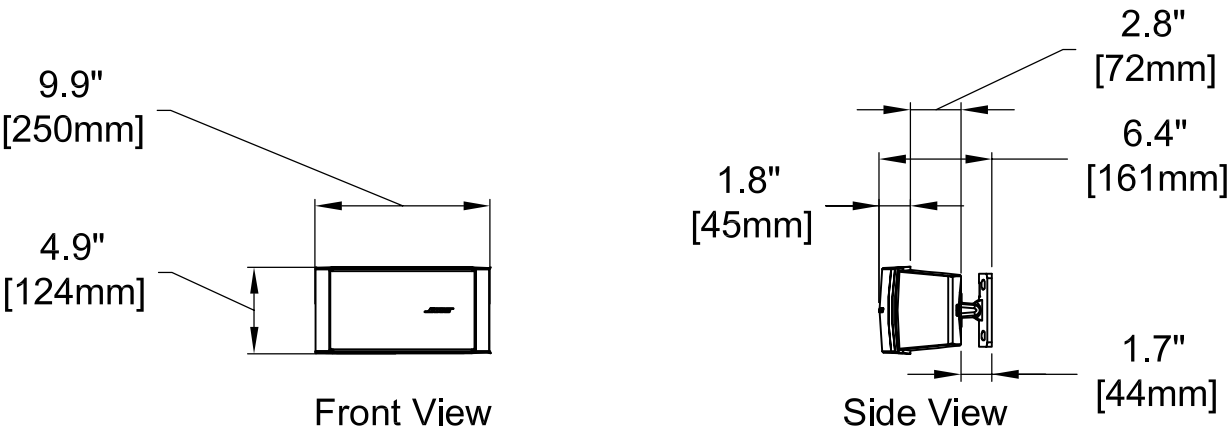


Tap Chart

| FreeSpace DS 16S and DS 16SE Tap Chart | | | | | | | | |
|--|----|-----|-----|-----|-----|-----|-----|-----|
| Mount Height | m | 2.4 | 3.0 | 3.6 | 4.2 | 4.8 | 5.5 | 6.1 |
| | ft | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
| T A P | 1 | 78 | 77 | 77 | 76 | 75 | 74 | 73 |
| | 2 | 81 | 80 | 80 | 79 | 78 | 77 | 76 |
| | 4 | 84 | 83 | 83 | 82 | 81 | 80 | 79 |
| | 8 | 87 | 86 | 86 | 85 | 84 | 83 | 82 |
| | 16 | 90 | 89 | 89 | 88 | 87 | 86 | 85 |

dB_{SPL}

Mechanical Diagrams

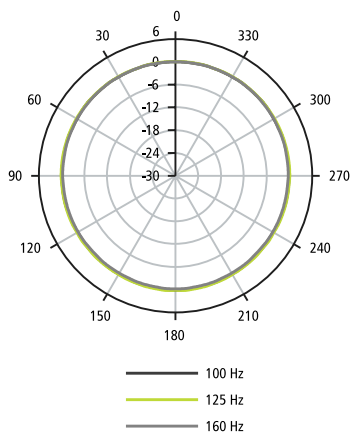


FreeSpace® DS 16S / 16SE loudspeaker

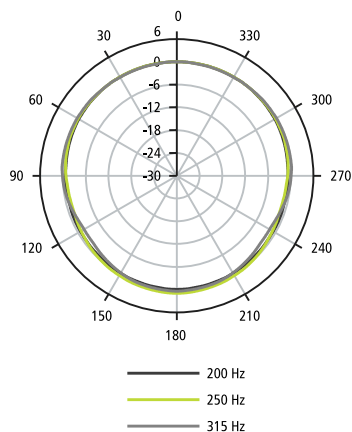


Horizontal Plots

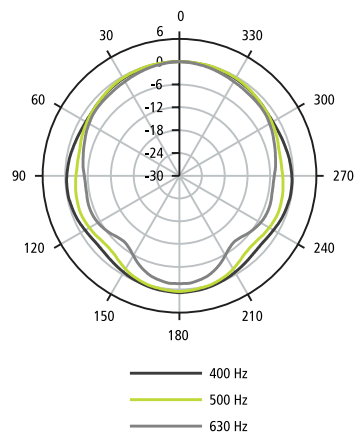
125 Hz Octave Band



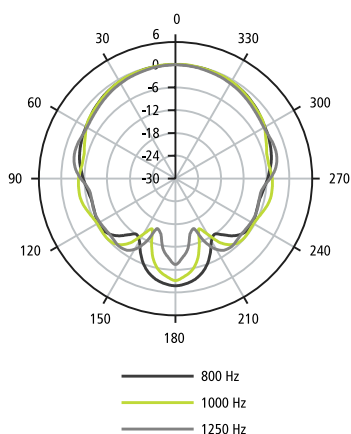
250 Hz Octave Band



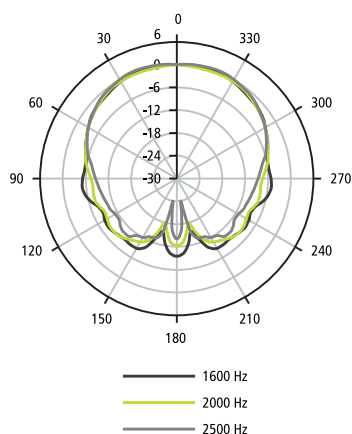
500 Hz Octave Band



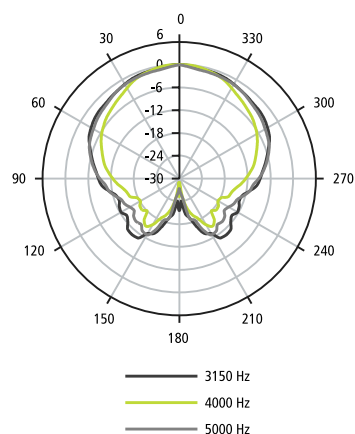
1000 Hz Octave Band



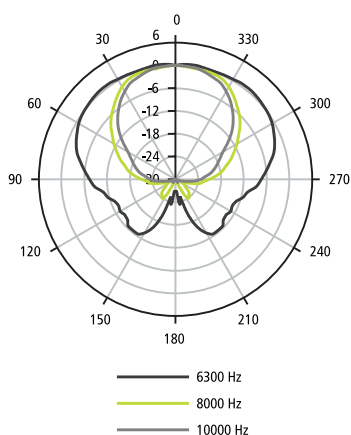
2000 Hz Octave Band



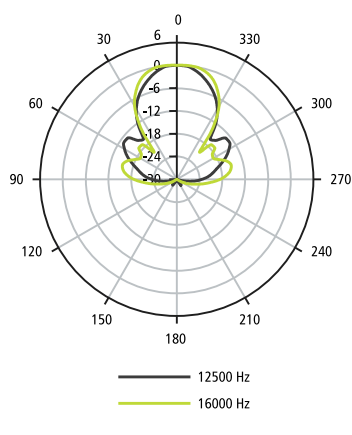
4000 Hz Octave Band



8000 Hz Octave Band



16000 Hz Octave Band

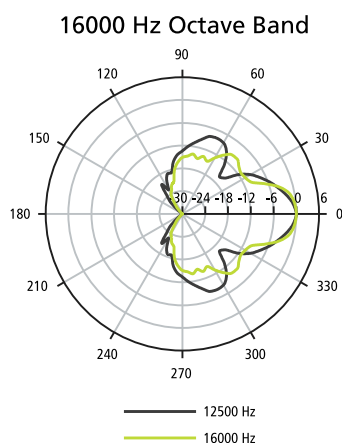
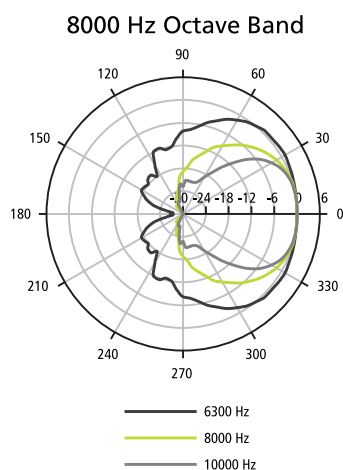
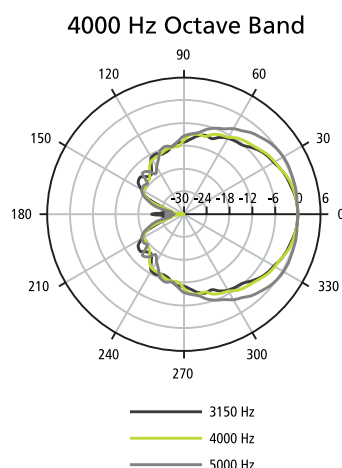
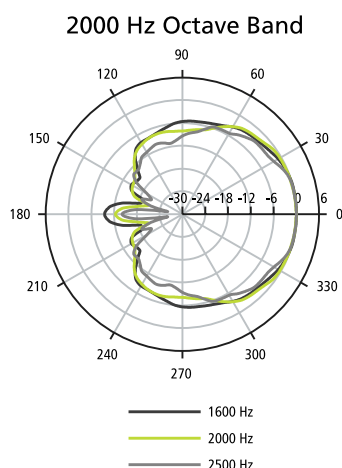
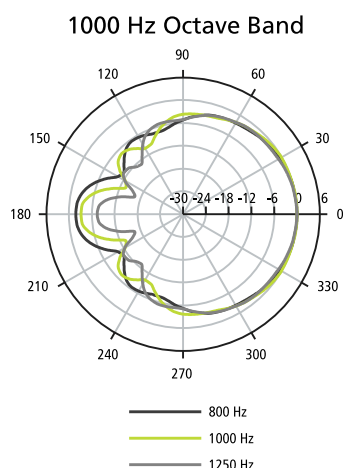
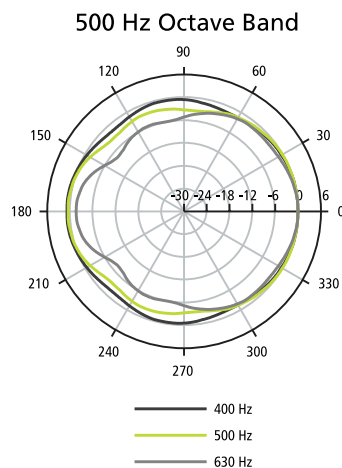
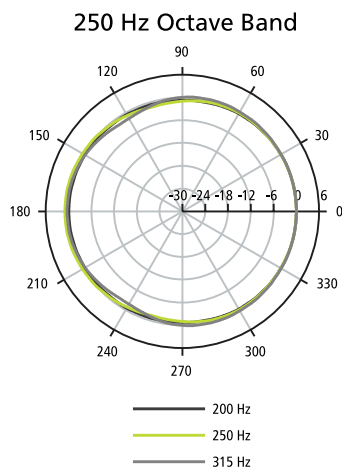
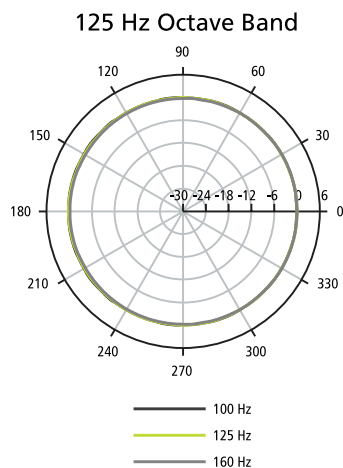


DS16S/SE

FreeSpace® DS 16S / 16SE loudspeaker



Vertical Plots



DS16S/SE

FreeSpace® DS 16S / 16SE loudspeaker



Architects' and Engineers' Specifications

Each loudspeaker shall be a 16 watt, ported loudspeaker utilizing one 2.25" (57mm) full-range driver for installation on walls or other flat, solid surfaces.

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

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

Each loudspeaker shall have a bandwidth of 95 Hz – 17 kHz and a maximum acoustic output of 96 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-terminal barrier strip on the included mounting bracket. Each loudspeaker shall be wired to the mounting bracket via a four-pin, pre-wired connector.

Power settings available shall be: 1, 2, 4, 8, and 16 watts at 70 volts; 2, 4, 8, and 16 watts at 100 volts; and 16 watts at 8 ohms (when referenced to IEC noise for 100 hours). The nominal dispersion shall be 170° H x 160° V at -6 dB (average 1 – 4 kHz). When used with optional junction boxes, which include a ceramic connector and a thermal fuse, the loudspeakers shall meet numerous standards for combination music and evacuation systems around the world.

The loudspeakers shall be the Bose® FreeSpace® DS 16S and DS 16SE loudspeakers.

Safety and Regulatory Compliance

The FreeSpace® DS 16S and DS 16SE 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 16SE is suitable for use outdoors in wet locations.
- The DS 16S is suitable for use indoors in damp 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.

The DS 16S and DS 16SE 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.