

# 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.

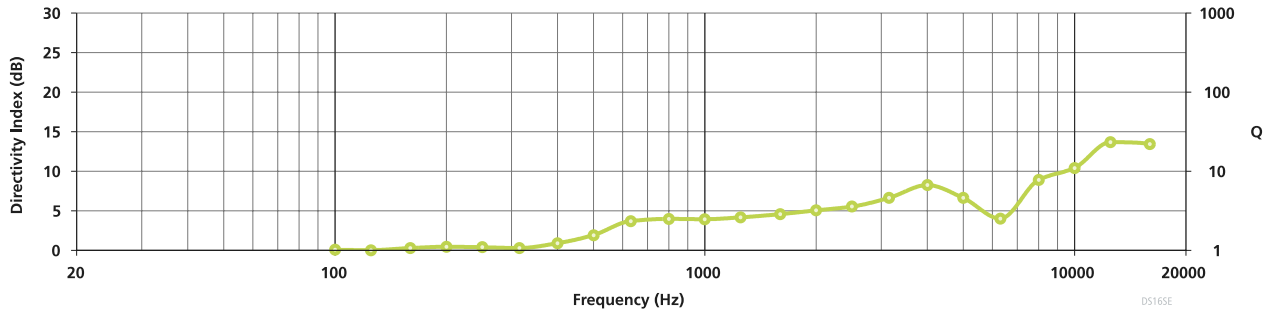
## Technical Specifications

System Performance		
Frequency Response (+/-3 dB) <sup>1</sup>	95 Hz - 17 kHz	
Frequency Range (-10 dB) <sup>1</sup>	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 <sup>2</sup>	16 W (64 W peak)	
Sensitivity (SPL / 1 W @ 1 m) <sup>3</sup>	84 dB SPL	
Maximum SPL @ 1 m <sup>4</sup>	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		
	<b>FreeSpace® DS 16S</b>	<b>FreeSpace® DS 16SE</b>
Black	040783	040785
White	040784	040786

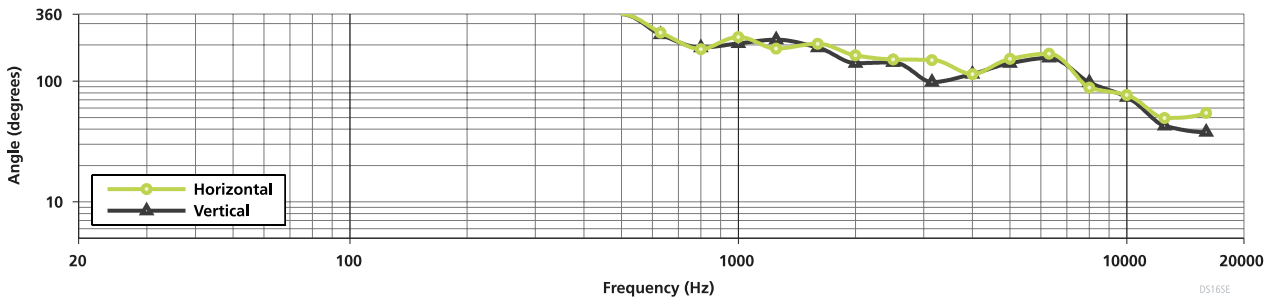
### Footnotes:

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

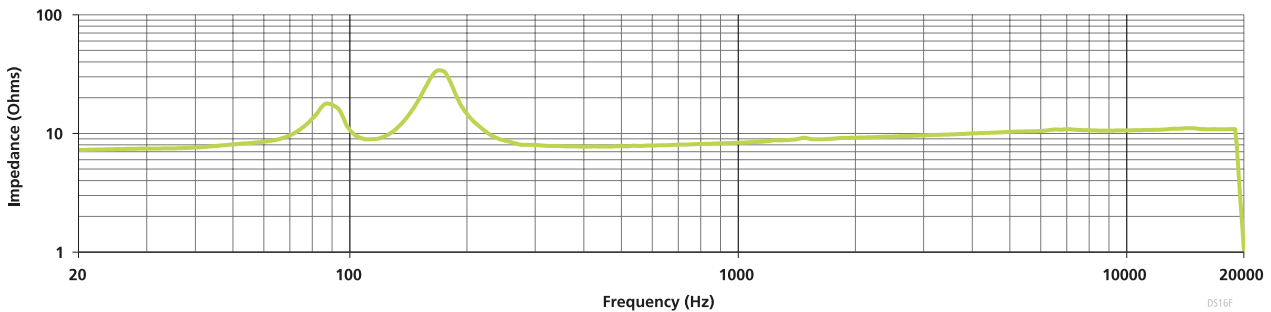
## Directivity Index and Q



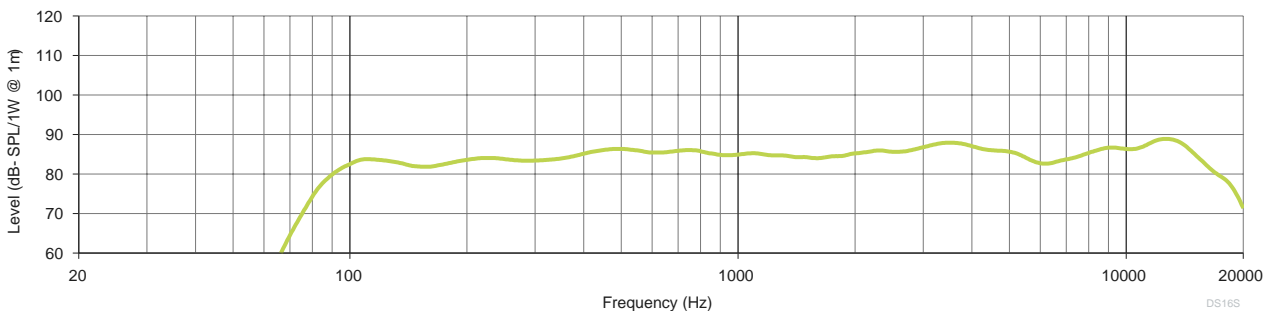
## Beamwidth



## Impedance



## On-Axis Response



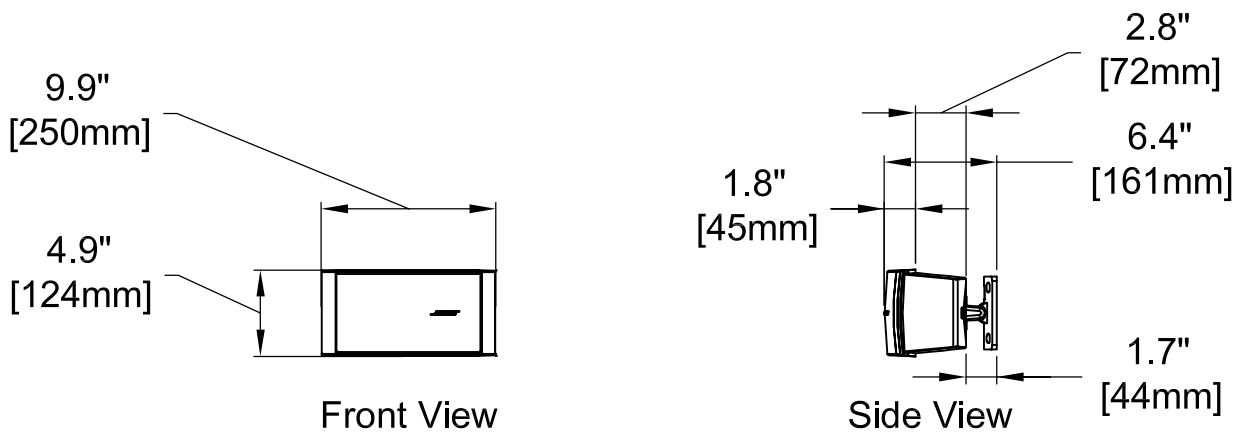
# FreeSpace® DS 16S / 16SE loudspeaker



## 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	dB <sub>SPL</sub>
	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	

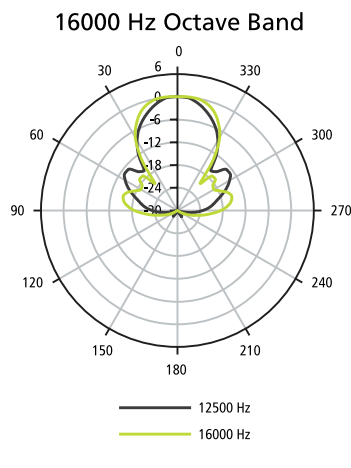
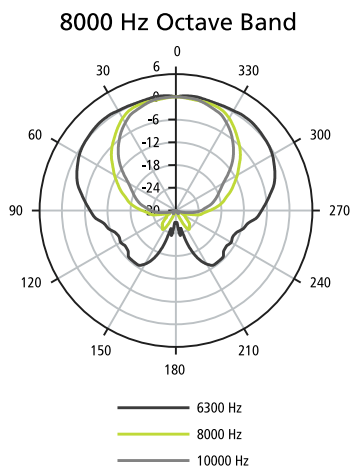
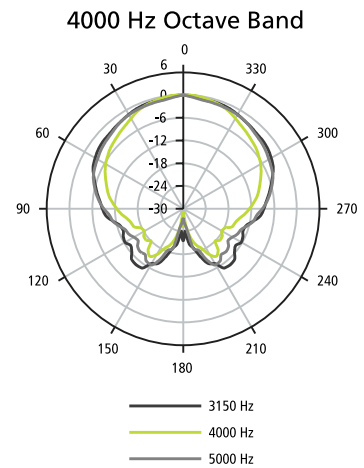
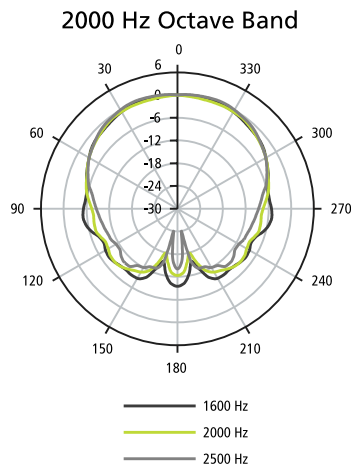
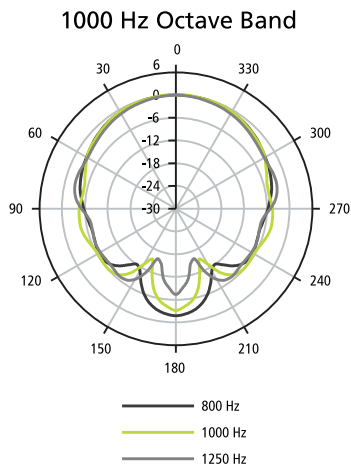
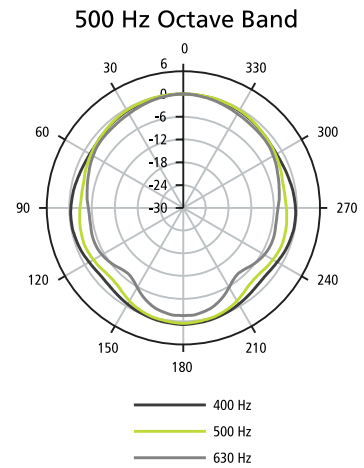
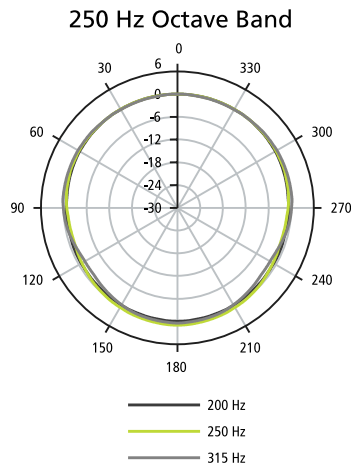
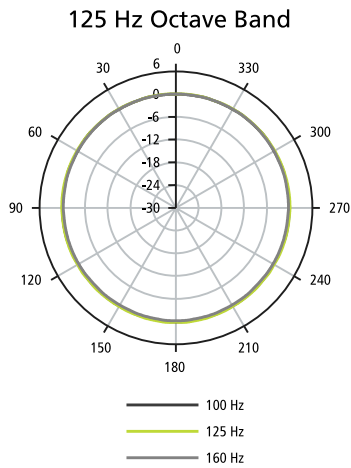
## Mechanical Diagrams



# FreeSpace® DS 16S / 16SE loudspeaker



## Horizontal Plots

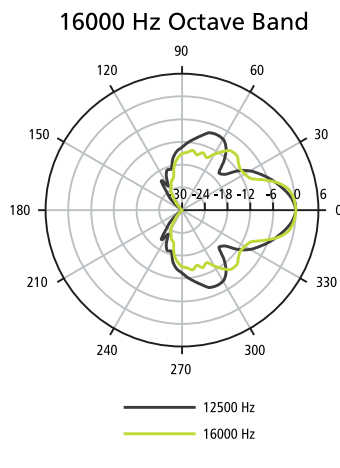
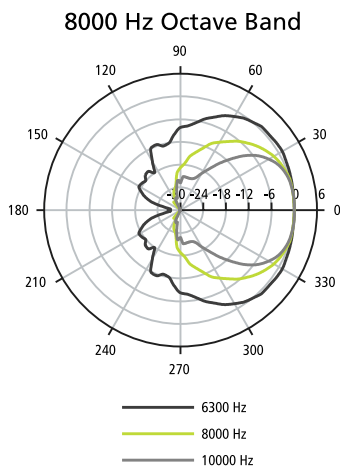
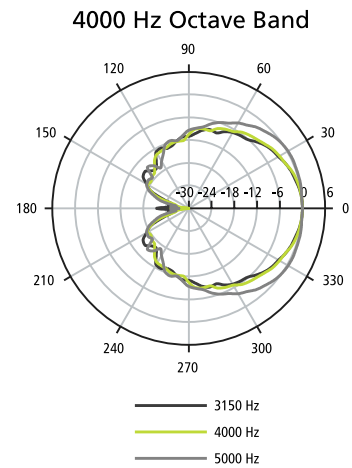
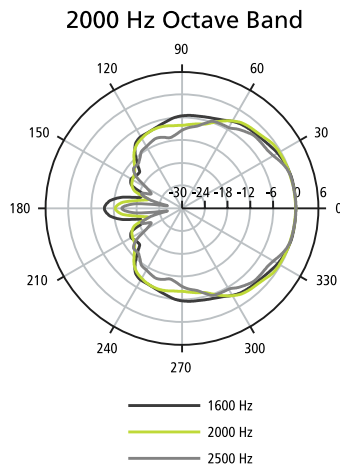
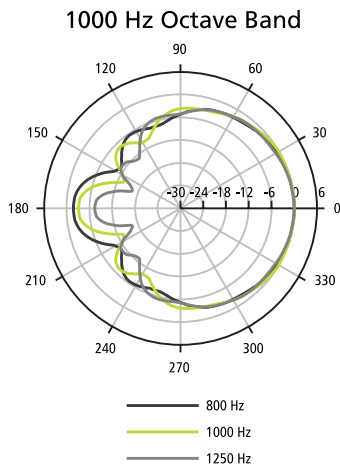
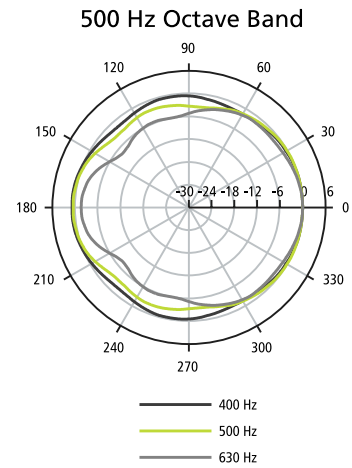
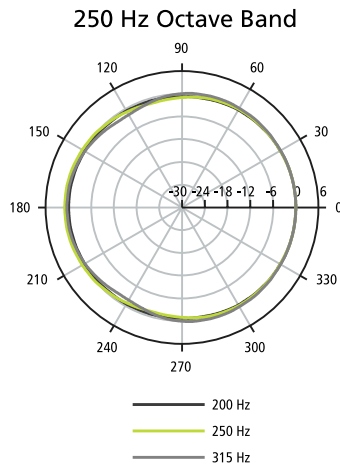
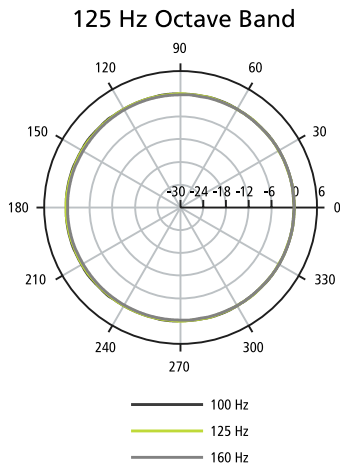


DS16S/SE

# 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.