

DSP-7A

High-Fidelity Active Bookshelf Speaker System



Description

The DSP-7A High-Fidelity Active Bookshelf Speaker System combines a specialized air-motion tweeter with a custom-designed 6.5-inch composite woofer to deliver smooth, transparent highs, natural bass, and detailed musical reproduction. Its dedicated amplification for high and low frequencies, advanced DSP crossover, and precise frequency and phase correction help preserve the original character of music. Featuring a built-in 24-bit/192 kHz DAC and versatile connectivity, including Bluetooth with aptX HD support, USB, coaxial, optical, balanced XLR, and RCA inputs, the DSP-7A connects effortlessly to a wide range of audio sources. Finished with premium wood veneer or piano lacquer, it brings together refined sound quality and elegant design for an exceptional home listening experience.

Features

- **Specialized Air-Motion Tweeter:** Features a special silicide diaphragm measuring 114 × 70 mm, providing a large radiating area, wide frequency response, and powerful output for smooth, rich, and transparent high-frequency reproduction.
- **Optimized Tweeter Design:** The air-motion tweeter has been specifically redesigned for the DSP-7A, offering a wider frequency response, higher power handling, and smoother, richer treble performance.
- **Custom-Designed 6.5-Inch Woofer:** Developed specifically for the DSP-7A, the woofer features an aluminum frame, a carbon-sprayed composite diaphragm incorporating mica, and a 35 mm CCA flat-wire voice coil. Its newly designed suspension system further reduces distortion caused by cone breakup, improving transient response and resolution across the mid and low frequencies.
- **High-Quality Power Supply:** Each speaker enclosure features an independent high-quality toroidal

transformer, with separate windings supplying the high- and low-frequency amplifiers. Schottky diodes and ELNA for AUDIO electrolytic capacitors are used in the rectification and filtering circuits to provide ample power. The DSP-7A further optimizes power-supply filtering to enhance system immunity to interference.

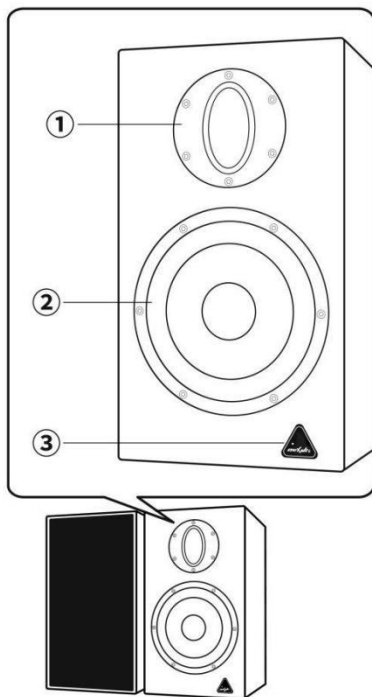
- Direct Amplification with Active Crossover: Eliminates the conventional passive analog crossover, with each driver powered directly by its own dedicated amplifier. This design avoids the energy losses and phase shifts associated with inductors and capacitors in traditional crossover networks.
- Dedicated Amplification: Uses amplifier circuits carefully matched to the characteristics of each driver, with an 80 W Class AB amplifier for the tweeter and a 180 W Class D amplifier for the woofer.
- Advanced DSP Processing: The electronic crossover incorporates a dedicated Cirrus Logic audio DSP processor with 32-bit oversampling processing to provide the processing power required for system operation.
- OCEAN Sound 2.0 Technology: Combines a DSP-based electronic crossover architecture with the upgraded OCEAN Sound 2.0 core algorithm, enabling point-by-point frequency and phase correction at 5,700 sampling points across the frequency response range to reproduce music as faithfully as possible.
- High-Precision Clock Synchronization: Employs a high-grade active servo crystal oscillator and communication-grade clock processing technology to provide highly accurate synchronization signals for digital circuits, including the DSP and DAC.
- High-Performance 24-bit/192 kHz DAC: Integrates a high-performance Cirrus Logic decoder supporting D/A conversion of linear PCM signals at 44.1, 48, 88.2, 96, 176.4, and 192 kHz via coaxial and optical digital inputs. Combined with the OCEAN Sound 2.0 system architecture, it delivers more precise PCM conversion and enhanced decoding performance for high-resolution audio files.
- Direct Digital Signal Processing: Uses low-level data transfer protocols between the DSP and DAC to eliminate audio quality degradation caused by sample rate conversion (SRC), combining high-precision decoding with high-quality musical reproduction.
- Bluetooth 5.0 Connectivity: Features built-in Qualcomm Bluetooth 5.0 and supports SBC, AAC, aptX, and aptX HD audio codecs. Specialized software optimization and low-latency processing compensate for the characteristics of Bluetooth audio compression and transmission, allowing easy music playback from smartphones, tablets, and computers.
- Driver-Free USB Audio: Features a built-in USB audio interface that connects directly to computers running macOS, Windows, or Linux without requiring additional driver installation.
- Innovative Preamplifier Design: Delivers lower nonlinear distortion and preserves rich musical details at both low and high listening volumes.
- Independent Input Volume Memory: Allows the volume of each input channel to be adjusted and stored independently. Its distinctive preamplifier design helps balance output-level differences between audio sources for a more consistent listening experience.
- Fully Balanced Signal Path: Features a balanced circuit design throughout audio input, transmission, processing, and amplification, providing strong resistance to interference and a wide dynamic range.
- High-Quality Analog Audio Circuitry: Uses Texas Instruments OPA2604 high-performance audio operational amplifiers for differential amplification in each high- and low-frequency channel.
- Four-Layer Gold-Plated PCB: Features a four-layer printed circuit board with gold-plated finish, providing complete isolation between power ground, signal ground, digital ground, and analog ground.
- Premium Audio Components: Incorporates high-precision, low-noise metal-film resistors, 24K gold-plated relays, and ELNA and WIMA audio-grade coupling capacitors to ensure an excellent signal-to-noise ratio and a quieter musical background.
- Reliable Connections: Uses connectors and components from leading suppliers, including NEUTRIK, to enhance connection reliability.
- Wide Frequency Response: Delivers a frequency response of 38 Hz–40 kHz (± 3 dB) and a peak maximum SPL of 109 dB for accurate, clear, and natural sound reproduction.

- Premium Cabinet Finish: Constructed from custom high-quality MDF with carefully selected wood veneer or a hand-finished piano-lacquer finish. The matching piano-lacquer speaker stands, combining wood and leather elements, complement the home interior.
- Dimmable Listening Environment: Features a delayed LED indicator shutoff function to minimize visual distractions and create a more comfortable listening experience in dark environments.
- Full-Function Infrared Remote Control: Comes with a thoughtfully designed infrared remote featuring large, clearly arranged buttons and durable metal dome switches for reliable operation and convenient control.
- Versatile Applications: Suitable for near-field monitoring in professional audio production, vocal and instrumental music instruction and reference listening, content creation, Hi-Fi music listening, high-quality computer multimedia, high-fidelity TV audio reproduction, background music in studies and tea rooms, and high-quality conference sound reinforcement.

Specifications

Model	DSP-7A
Speaker Drivers	114 × 70 mm Air-Motion Tweeter + 6.5-Inch Woofer
Tweeter Diaphragm	Specialized silicide diaphragm
Woofer Diaphragm	Carbon-fiber-sprayed mica composite diaphragm
Woofer Voice Coil	35mm CCA
Cabinet Material and Finish	Custom MDF with solid wood veneer and matte finish / Black piano lacquer / White piano lacquer
Frequency Response	38 Hz–40 kHz
Crossover Frequency	2,200 Hz (±3dB)
Phase Correction Points	5,700 sampling points
Maximum SPL	109 dB peak
Amplifier Power	Tweeter: 80W; Woofer: 180W
Amplifier Class	Tweeter: Class AB; Woofer: Class D
Input Interfaces	Balanced analog XLR, unbalanced analog RCA, digital coaxial (COAX), digital optical (OPT), Bluetooth HD audio, USB (driver-free)
Bluetooth Standard	Bluetooth 5.0 (SBC, AAC, aptX, and aptX HD supported)
Digital Input Formats	PCM digital audio at 44.1, 48, 88.2, 96, 176.4, and 192 kHz
Input Impedance	>22KΩ (balanced)
Total Harmonic Distortion (THD)	<0.01% (1 kHz)
Indicator	Power / Operating Status
Protection	Output Overcurrent Protection, Over-Temperature Protection, and Limiter Protection
AC Power Requirement	220 V / 50 Hz
Power Consumption	280 W (max) / Less than 0.35 W (standby)
Dimensions (W × H × D)	222 × 392 × 337 mm (including grille)
Weight	24.8 kg per pair

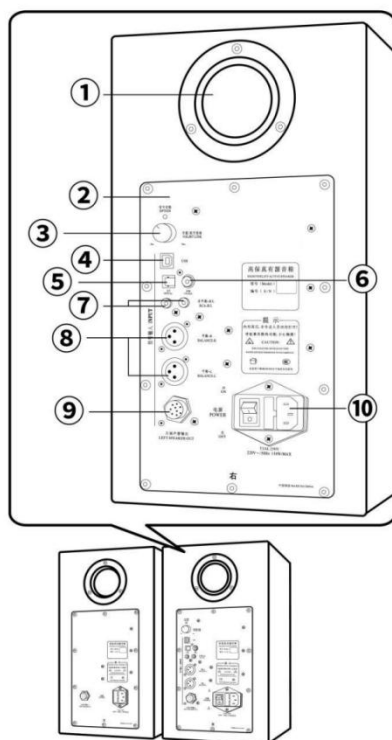
Front Panel



DSP-7A Front Panel of the Master Speaker

1. Air-motion tweeter with a specialized silicide diaphragm.
2. 6.5-inch woofer with a carbon-sprayed composite diaphragm.
3. Brand badge with built-in LED indicator and infrared receiver.

Rear Panel



DSP-7A Rear Panel of the Master Speaker

1. Bass Reflex Port: For optimal performance, maintain a distance of at least 20 cm between the speaker and the rear wall.
2. Input Mode Selector: Press to cycle through the input sources in the following order: Bluetooth (BT), analog RCA, digital coaxial (COAX), USB, digital optical (OPT), and balanced analog XLR.
3. Multifunction Control Knob: Supports both rotation and press operations, with the following functions:
 - (1) Volume Control: Turn clockwise to increase the volume or counterclockwise to decrease it.
 - (2) Bluetooth Pairing: In Bluetooth mode, press and hold the volume control knob on the rear panel of the master speaker for 5 seconds to enter Bluetooth pairing mode. For detailed pairing instructions, refer to the Bluetooth section under “Operating Instructions” of this manual.
 - (3) LED Indicator Control: When the speaker is powered on, briefly press the knob to activate the LED indicator auto-off mode. After any operation using the master speaker or remote control, the indicator automatically turns off after a 30-second delay, minimizing visual distraction in dim environments and allowing you to focus on your music. Briefly press the knob again to switch to the continuously illuminated LED mode.
4. USB Audio Input: Connect a computer running Windows, macOS, or Linux using a USB-B cable. The system will automatically recognize the playback device as “AUXDIO”. Select this device to play audio through the DSP-7A’s built-in USB audio interface.
5. Digital Optical (OPT) Input: Connect to the optical digital output of a CD/SACD/DVD/BD player, digital audio player, game console, set-top box, TV, or other compatible device. Supports linear PCM digital audio input up to 24-bit/192 kHz.
6. Digital Coaxial (COAX) Input: Connect to the coaxial digital output of a CD/SACD/DVD/BD player, digital audio player, game console, set-top box, TV, or other compatible device. Supports linear PCM digital audio input up to 24-bit/192 kHz.
7. Analog RCA (AUX) Input: Unbalanced RCA audio input.
8. Balanced Analog XLR Input: Balanced XLR audio input. Pin assignments: ① Ground, ② Signal +, ③ Signal –.
9. Signal Output: Connect to the signal input on the left speaker using the dedicated inter-speaker cable.
10. AC Power Input: Connect to a 220 V AC power supply ($\pm 10\%$, 50/60 Hz). Set the power switch to ON to turn on the AC power; the red indicator inside the switch will illuminate. Set it to OFF to disconnect the AC power; the indicator will turn off and the speaker system will shut down.

Notes:

1. The DSP-7A consists of a master speaker and a slave speaker. When facing the speakers, the master speaker is on the right (R), and the slave speaker is on the left (L).
2. Each speaker enclosure contains an independent transformer and separate high- and low-frequency amplifier circuits. The preamplifier and crossover board is located in the master speaker.
3. The master and slave speakers use synchronized master-slave power control. Operating the power switch on the master speaker synchronizes the power state of the slave speaker.
4. The master speaker has a brand badge at the lower right of the front panel. Its rear panel houses the control knob, input connectors, power indicator, and power switch.
5. The slave speaker has no brand badge. Its rear panel features the inter-speaker connection port and AC power socket.
6. This product uses a neodymium magnetic grille with a strong magnetic attraction. Remove the grille carefully and avoid placing your fingers between the grille and speaker when reinstalling it, as the strong magnets may pinch your fingers. The grille attenuates high frequencies by 0.5 dB. Removing the grille during use is recommended.
7. The infrared remote control receiver is concealed behind the LED indicator badge on the master speaker. Ensure the grille is installed in the correct orientation and does not block the receiver, as this may interfere with remote control operation.
8. When the format of the incoming digital audio signal changes, the speakers may briefly mute for

approximately 2 seconds. This is normal and does not indicate a malfunction.

9. The cable connecting the two speakers is a dedicated cable containing audio differential signal lines and function control lines. Do not extend or replace this cable yourself.

10. Connecting the speakers to an incorrect supply voltage may cause abnormal operation, damage the speakers, or create an electric shock hazard.

11. The power switch incorporates an overcurrent protection fuse rated at 2 A/250 V.

Remote Control



DSP-7A Remote Control

Note: Before using the remote control, remove the plastic insulating tab from the battery compartment on the back.

No.	Button Function	Special Instructions	Button Label
1	Power	Press and hold for at least 3 seconds to turn the speaker system on or off.	
2	Mute	The LED indicator lights up red continuously.	
3	Volume +	Press briefly to increase the volume. Pressing this button can also release mute.	+
4	Volume –	Press briefly to increase the volume. Pressing this button can also release mute.	–
5	Play/Pause	Functions only in Bluetooth mode.	
6	Previous Track	TRACK up; functions in Bluetooth mode.	
7	Next Track	TRACK down; functions in Bluetooth mode.	
8	Bluetooth	Press and hold for 5 seconds to enter pairing mode (blue LED flashes rapidly)	BT
9	Unbalanced Analog Input	LED indicator is cyan.	RCA
10	USB Input	LED indicator is white.	USB
11	Coaxial Input	LED indicator is orange.	COA
12	Balanced Analog Input	LED indicator is green.	XLR
13	Optical Input	LED indicator is purple.	OPT

Notes:

1. When operating the remote control, point it toward the infrared receiver located in the brand badge at the lower right of the master speaker's front panel. The operating distance should not exceed 8 meters. Low battery power may reduce the operating range or prevent the remote from functioning.
2. The Play/Pause, Previous Track, and Next Track buttons function only in Bluetooth mode.
3. The remote control uses one CR2025 button cell battery. Check the battery compartment regularly to prevent battery leakage from damaging the remote control.
4. Dispose of used batteries in accordance with applicable local regulations. Do not discard them with general waste, as this may cause environmental pollution.