

BOSE[®]



IZA 190-HZ
IZA 250-LZ
ZA 190-HZ
ZA 250-LZ

FreeSpace[®]

Integrated Zone Amplifier/Zone Amplifier

Installation and Operating Guide

Installations- og betjeningsvejledning

Installations- und Bedienungsanleitung

Guía de instalación y funcionamiento


Guide d'installation et d'utilisation


Manuale di installazione e funzionamento


Installatie- en bedieningshandleiding


Bruksanvisning för installation och användning


- * For use by professional installers only
- * Kun beregnet til at anvendes af professionelle installatører
- * Nur zur Verwendung durch einen fachkundigen Monteur
- * Solo apto para instaladores profesionales
- * Réservé à un technicien professionnel
- * L'utilizzo è riservato agli installatori professionisti
- * Uitsluitend bestemd voor professionele installateurs
- * Endast för professionella användare

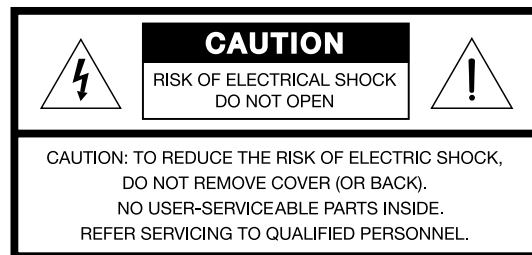
 **This product is intended for installation by professional installers only!** This document is intended to provide professional installers with basic installation and safety guidelines for Bose® FreeSpace® amplifiers in typical fixed-installation systems. Please read this document before attempting installation.


 **Warning:** All Bose products must be used in accordance with local, state, federal and industry regulations. It is the installer's responsibility to ensure installation of the amplifier is performed in accordance with all applicable codes, including local building codes and regulations. Consult the local authority having jurisdiction before installing this product.


 **Warning:** To reduce the risk of fire or electrical shock, do not expose the product to rain or moisture.


 **Caution:** Do not mount the chassis in locations where condensation may occur.


 **Warning:** Do not expose this apparatus to dripping or splashing, and do not place objects filled with liquids such as vases, on or near the apparatus. As with any electronic products, use care not to spill liquids into any part of the system. Liquids can cause a failure and/or a fire hazard.




 The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated dangerous voltage within the system enclosure that may be of sufficient magnitude to constitute a risk of electrical shock. Do not touch the output terminals while amplifier power is ON. Make all connections with amplifier OFF.

 The exclamation point within an equilateral triangle, as marked on the system, is intended to alert the user to the presence of important operating and maintenance instructions in this installation guide.

 **Caution:** This product shall be connected to an AC mains socket outlet with a protective earthing (grounding) connection.

 **Caution:** Do not place any naked flame sources, such as lighted candles, on or near the apparatus.


 **Warning:** Contains small parts which may be a choking hazard. Not suitable for children under age 3.

Note: The product label is located on the bottom of the product.

Note: Where the mains plug or appliance coupler is used as the disconnect device, such disconnect device shall remain readily operable.

Note: The product must be used indoors. It is neither designed nor tested for use outdoors, in recreational vehicles, or on boats.

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions – for future reference.
3. Heed all warnings – on the product and in all product documentation.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions. To ensure reliable operation of the product and to protect it from overheating put the product in a position and location that will not interfere with its proper ventilation.
8. Do not install near any heat sources, such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wider blade or third prong is provided for your safety. If the provided plug does not fit in your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12.  Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time to prevent damage to this product.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way such as power-supply cord or plug is damaged; liquid has been spilled or objects have fallen into the apparatus; the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped. Do not attempt to service this product yourself. Opening or removing covers may expose you to dangerous voltages or other hazards. Please call Bose to be referred to an authorized service center near you.
15. To prevent risk of fire or electric shock, avoid overloading wall outlets, extension cords, or integral convenience receptacles.
16. Do not let objects or liquids enter the product – as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock.
17. Do not allow the unit to exceed the maximum operating ambient temperature of 40° C. Be aware of conditions in an enclosed rack that may increase the temperature above room ambient conditions.

 This product conforms to all EU Directive requirements as applicable by law. The complete Declaration of Conformity can be found at www.Bose.com/compliance.

This Product meets the immunity requirements for the E2 class EN55103-2 directive.

Initial turn on inrush current: 13.9 Amps (230V/50 Hz), 7.6 Amps (120V/60 Hz)

Inrush current after 5 seconds AC mains interruption: 13.9 Amps (230V/50 Hz), 7.5 Amps (120V/60 Hz)

Information About Products That Generate Electrical Noise (FCC Compliance Notice for US)

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at one's own expense.

This product complies with the Canadian ICES-003 Class A specifications.

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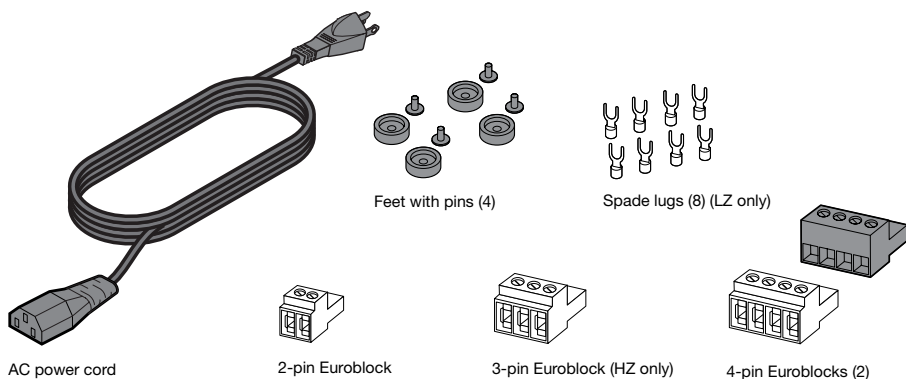
1. Introduction

This guide describes the installation and operating procedures for the following:

- FreeSpace® IZA 190-HZ Integrated Zone Amplifier
- FreeSpace IZA 250-LZ Integrated Zone Amplifier
- FreeSpace ZA 190-HZ Zone Amplifier
- FreeSpace ZA 250-LZ Zone Amplifier

2. FreeSpace® IZA 190-HZ/IZA 250-LZ Integrated Zone Amplifier

2.1 Contents

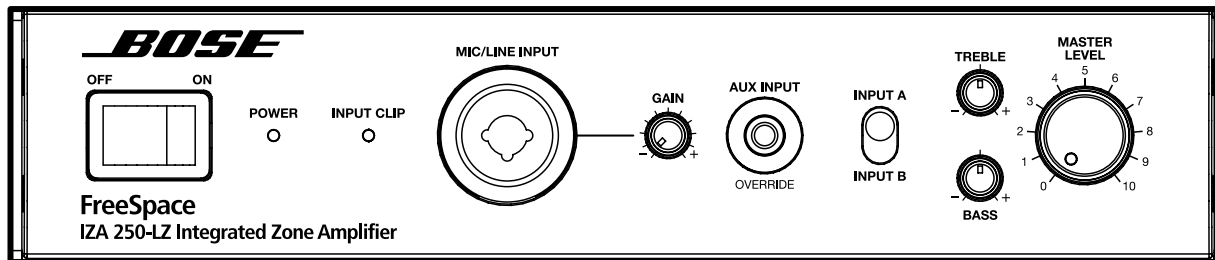


- (1) Power cord
- (4) Feet with pins
- (1) 4-pin Euroblock for PAGE input
- (1) 4-pin Euroblock for REMOTE connections
- (1) 2-pin Euroblock for MUTE connection
- (8) Spade lugs for OUTPUT connections (LZ only)
- (1) 3-pin Euroblock for OUTPUT connection (HZ only)

2.2 Front-panel

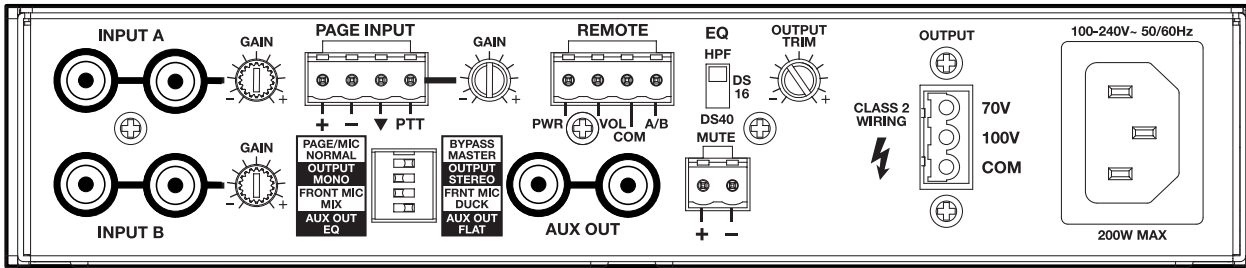
Note: Front-panel controls and indicators are identical on the FreeSpace IZA 190-HZ amplifier.

FreeSpace IZA 250-LZ

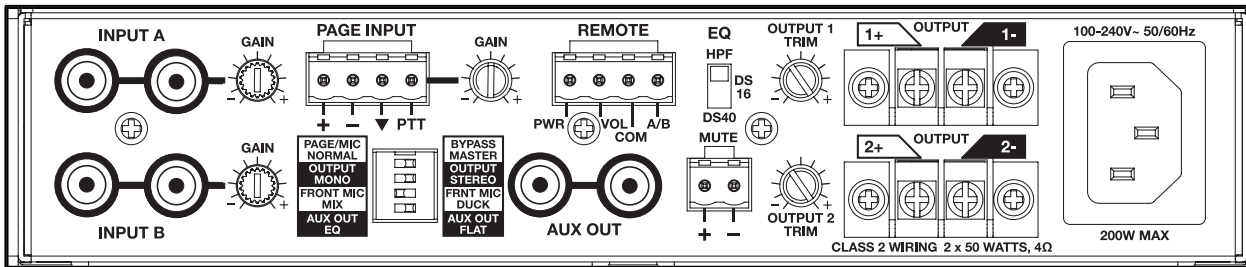


2.3 Rear-panel

FreeSpace® IZA 190-HZ



FreeSpace IZA 250-LZ



2.4 Loudspeaker connections

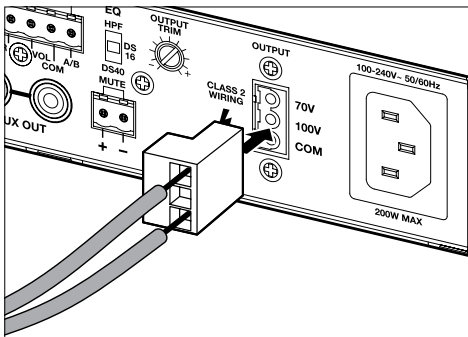
Use 18 AWG (0.8 mm²) to 14 AWG (2.0 mm²) size wire only.

2.4.1 Making loudspeaker connections (IZA 190-HZ)

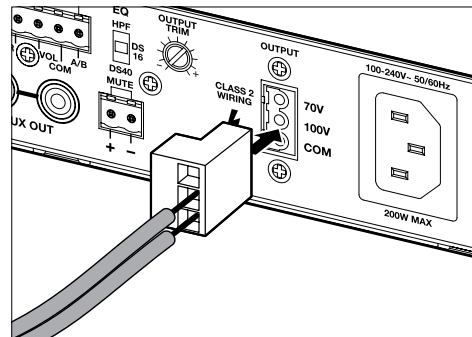
Note: Loudspeaker connections are the same for the ZA 190-HZ amplifier.

Wire the 3-pin Euroblock:

Use pins 1 (70V) and 3 (COM) for 70V operation.



Use pins 2 (100V) and 3 (COM) for 100V operation

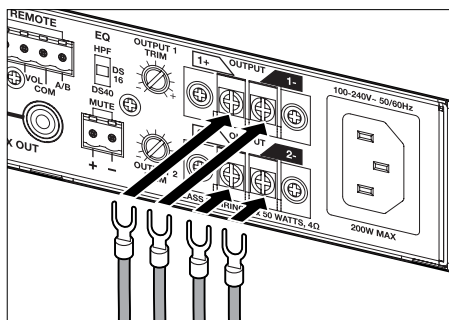


2.4.2 Making loudspeaker connections (IZA 250-LZ)

Note: Loudspeaker connections are the same for the ZA 250-LZ amplifier.

1. Attach included crimp-on spade lug connectors to loudspeaker wiring. Blue spade lug connectors are compatible with 16-14 AWG wire. Red spade lug connectors are compatible with 22-16 AWG wire.

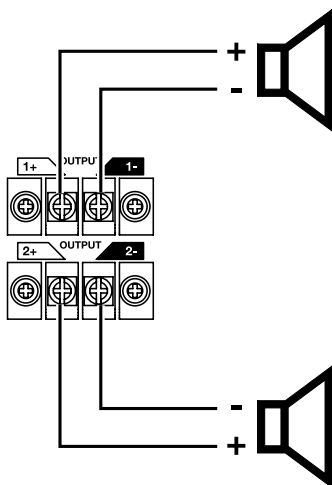
Note: You may need to bend the spade lugs to fit.



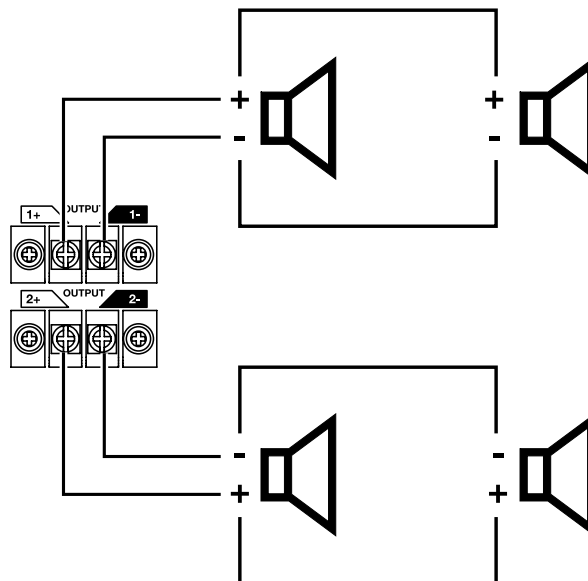
2. Make a single loudspeaker connection or connect two loudspeakers in parallel. When connecting the loudspeakers in parallel:
 - i. Connect the wires from the amplifier to the matching positive (+) and negative (-) terminals on the first loudspeaker.
 - ii. Connect the positive (+) and negative (-) terminals of the first loudspeaker to the positive (+) and negative (-) terminals of the second loudspeaker.

Caution: Do not connect more than two loudspeakers together in this manner. Doing so could damage the amplifier.

Single 4-8 ohm loudspeaker



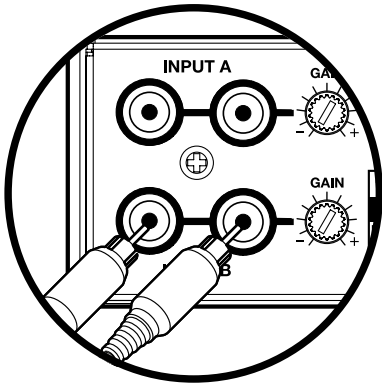
Two 8 ohm loudspeakers in parallel



2.5 Input connections

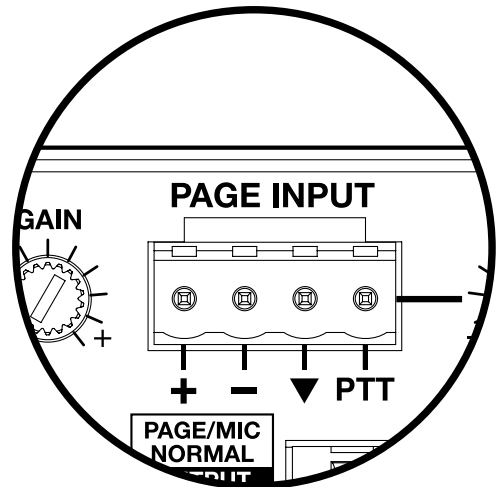
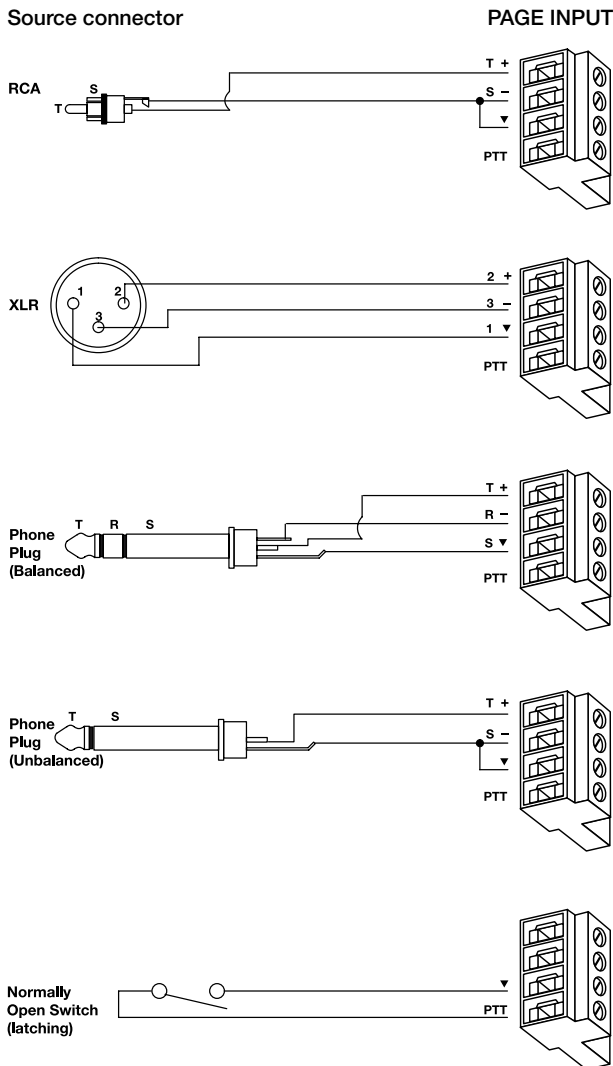
2.5.1 RCA input connections

Insert the RCA plugs into the INPUT A or INPUT B connectors.



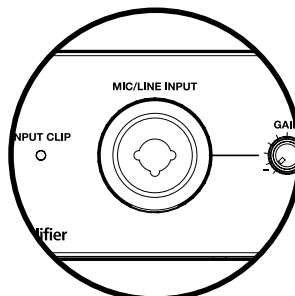
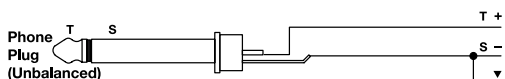
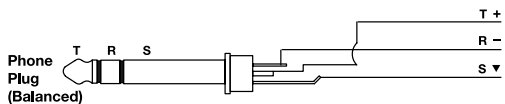
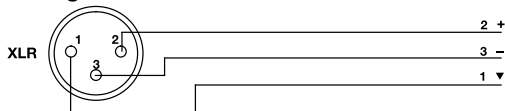
2.5.2 Page input connections

The PAGE INPUT is a mic/line input with a trigger contact closure. This input signal is routed to all outputs (including AUX OUT) when the trigger is detected. This is designed for push-to-talk paging microphones and telephone paging systems. See the diagrams below for input wiring configurations. Use the included 4-pin Euroblock.



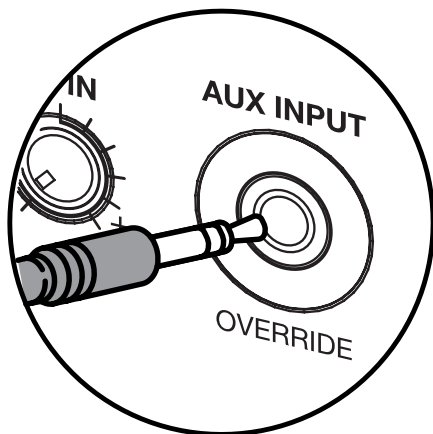
2.5.3 Mic/Line input connections (Front-panel)

The MIC/LINE INPUT connector is designed for use with handheld dynamic microphones and XLR, TRS, or TS 1/4" microphone cables. Line-level sources also can be used with this input. See the diagrams below for input wiring configurations.



2.5.4 Aux input (Front-panel)

The front panel auxiliary stereo line input connector is designed for connecting portable audio devices like MP3 players and laptops. When a 1/8" (3.5 mm) TRS input jack is connected to the AUX INPUT, the selected INPUT A/B is automatically overridden, even if the audio source connected to AUX INPUT is not playing.

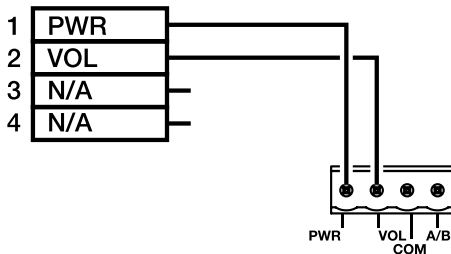


2.6 Remote Control connections

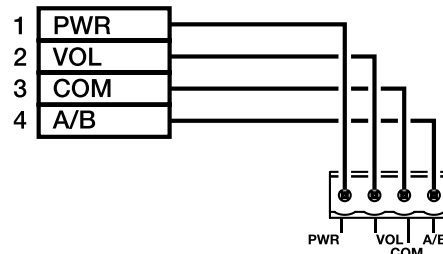
2.6.1 Remote volume control

The amplifier is designed to work with the Bose Volume Control User Interface (PC 041966) and Volume Control with A/B Select User Interface (PC 041967) accessories. The REMOTE connector on the rear panel of the amplifier is labeled to match the connectors on the user interfaces. Use the included 4-pin Euroblock.

Volume Control User Interface



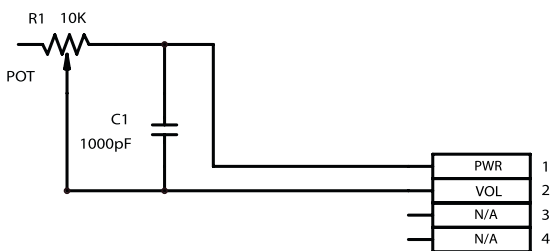
Volume Control with A/B Select User Interface



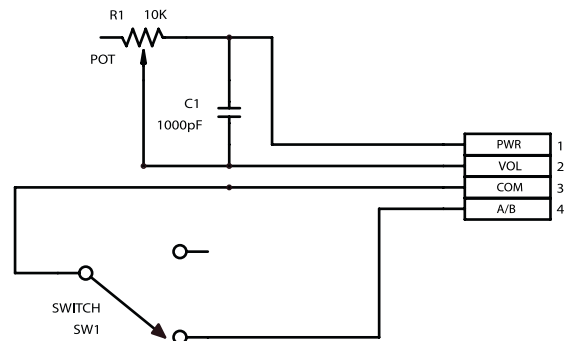
See the Bose Volume Control User Interface and Volume Control with A/B Select User Interface install guide for more details.

The amplifier also can be controlled with a standard linear taper 10k potentiometer and switch.

Volume Control

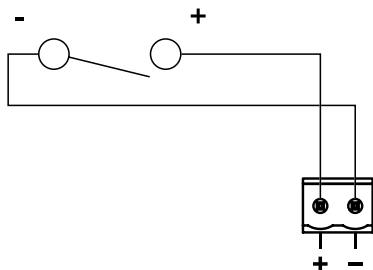


Volume Control with A/B Select



2.6.2 Mute with standard contact closure

The amplifier is designed to mute all outputs (including AUX OUT) when a trigger is detected via the MUTE connector. This is triggered from a standard contact closure. Use the included 2-pin Euroblock.

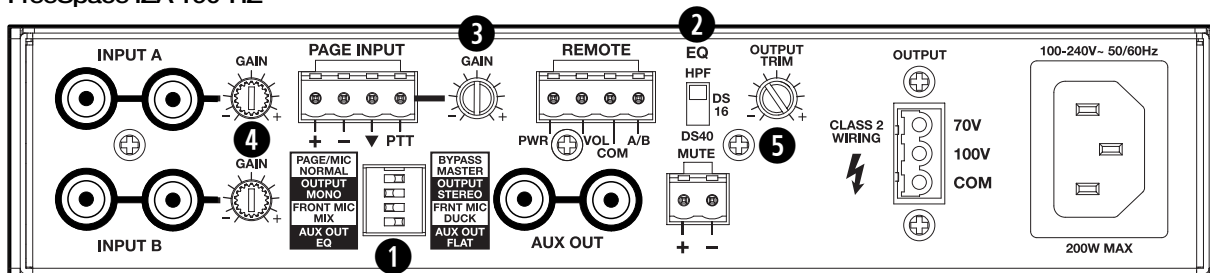


2.7 AC power connection

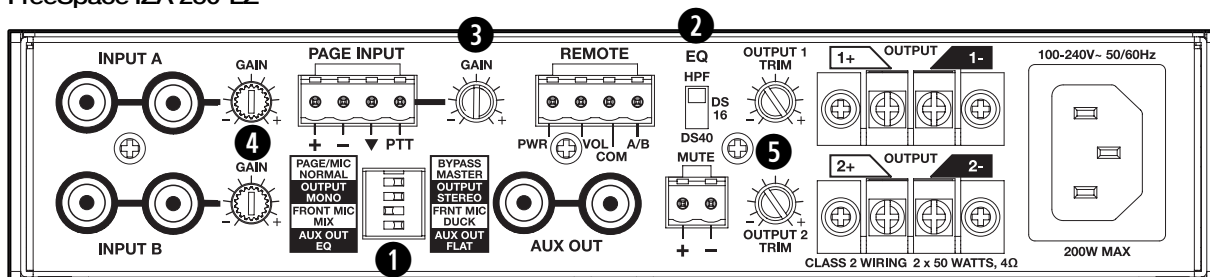
Once all the input and output connections have been made on the rear panel, connect the amplifier to AC power with included power cord.

2.8 Setup – Rear-panel controls

FreeSpace IZA 190-HZ



FreeSpace IZA 250-LZ



1 Amplifier mode DIP switches

PAGE/MIC NORMAL – BYPASS MASTER

Determines if page input source will follow the master level output or can be set at an independent output level to ensure announcements are heard.

OUTPUT MONO – OUTPUT STEREO

Determines if stereo input sources will be output in mono or stereo via loudspeaker connectors and AUX OUT RCA connectors.

Note: On the IZA 250-LZ amplifier, OUTPUT 1 is the left channel and OUTPUT 2 is the right channel when set to OUTPUT STEREO. On the IZA 190-HZ, the left channel is routed to the loudspeaker output when set to OUTPUT STEREO.

FRONT MIC MIX – FRONT MIC DUCK

Determines if front-panel microphone input will be mixed in with music source or if the music output level will be automatically lowered (“ducked”) when someone speaks into microphone.

AUX OUT EQ – AUX OUT FLAT

Determines if AUX OUT will have selected loudspeaker EQ preset applied to it or not. Allows for optimization of FreeSpace DS 16 and DS 40 loudspeakers when used with additional zone amplifiers.

2 Loudspeaker EQ preset switch

Provides loudspeaker equalization presets designed to optimize the performance of Bose FreeSpace DS 16 or DS 40 loudspeakers. A high-pass filter (HPF) setting is also available for use with any passive loudspeakers. The high-pass filter is set at 60 Hz for the IZA 190-HZ and at 40 Hz for the IZA 250-LZ.

The selected EQ preset (HPF, DS 16, DS 40) can be sent to an additional zone amplifier via AUX OUT if “AUX OUT EQ” is selected with the corresponding mode DIP switch.

3 Page input GAIN control

Allows for fine-tuning page input levels. If the front-panel INPUT CLIP indicator is red, reduce the input gain. The adjustment range is 0 dB to +50 dB.

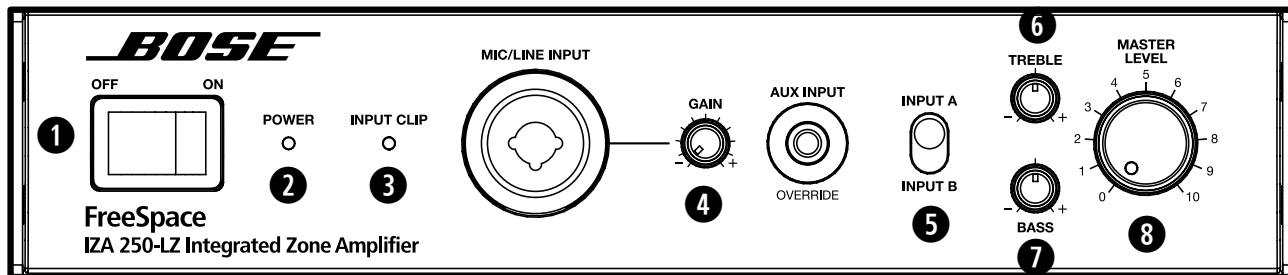
4 Line input GAIN control

Allows for fine-tuning of INPUT A/B levels. If the front-panel INPUT CLIP indicator is red, reduce the input gain. The adjustment range is –20 dB to +20 dB.

5 Output TRIM control

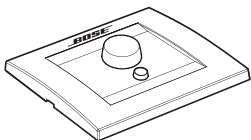
Allows for attenuating individual loudspeaker outputs relative to the Master Level. The adjustment range is –20 dB to 0 dB. This feature is helpful when one output is powering loudspeakers that need to be set at a lower volume level than loudspeakers on other outputs – including the outputs of an additional zone amplifier.

2.9 Operation – Front-panel controls and indicators

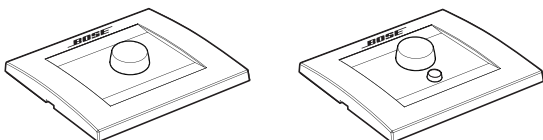


Note: Front-panel controls and indicators are identical on the FreeSpace® IZA 190-HZ amplifier.

- 1 **OFF/ON switch**
Turns amplifier on or off.
- 2 **POWER indicator**
Illuminates blue when amplifier is on.
- 3 **INPUT CLIP indicator**
Illuminates red whenever input source approaches the threshold value of -3dBFS. If the indicator illuminates frequently, reduce input signal level.
- 4 **MIC/LINE INPUT GAIN control**
Allows for fine-tuning of the MIC/LINE input level. If the INPUT CLIP indicator is red, reduce the input gain. The adjustment range is 0 dB to +50 dB.
- 5 **INPUT A/B selector switch**
Allows you to choose between rear line inputs A and B from the front panel of the amplifier.
Rear line inputs A and B can also be selected remotely with the use of optional Bose Volume Control with A/B Select User Interface accessory.
Note: When the Bose Volume Control with A/B Select User Interface is connected, the source select on the front panel of the amplifier will not function. The position of the A/B switch on the user interface will determine what source is selected.



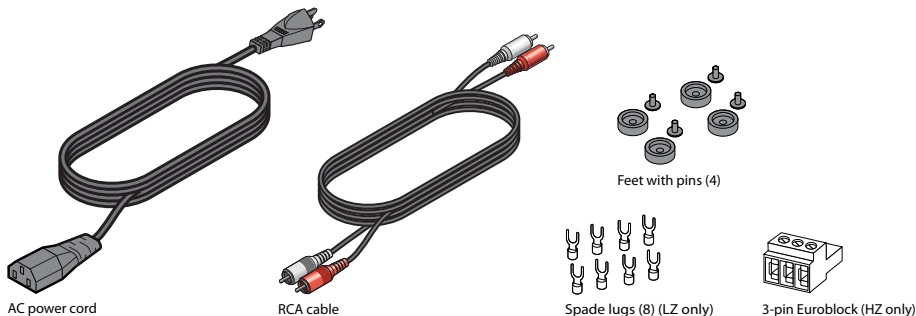
- 6 **TREBLE control**
Allows adjustment of the output tone. Provides +/-6 dB of adjustment at 7 kHz.
- 7 **BASS control**
Allows adjustment of the output tone. Provides +/-6 dB of adjustment at 100 Hz.
- 8 **MASTER LEVEL control**
Controls the overall system volume for both the loudspeakers and the variable AUX OUT.
The Master Level can also be controlled remotely with the use of optional Bose Volume Control User Interface or Volume Control with A/B Select User Interface accessories.



Note: When the Volume Control User Interface is connected, the front-panel MASTER LEVEL control will not function. The position of the volume control on the User Interface determines overall system volume.

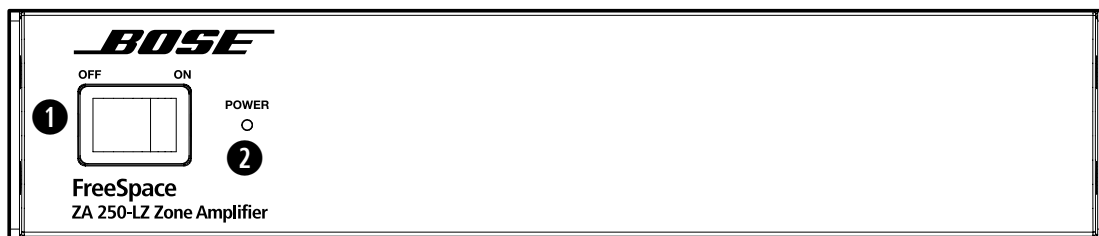
3. FreeSpace® ZA 190-HZ/250-LZ Zone Amplifier

3.1 Contents



- (1) Power cord
- (1) RCA stereo cable
- (4) Feet with pins
- (8) Spade lugs (LZ only)
- (1) 3-pin Euroblock (HZ only)

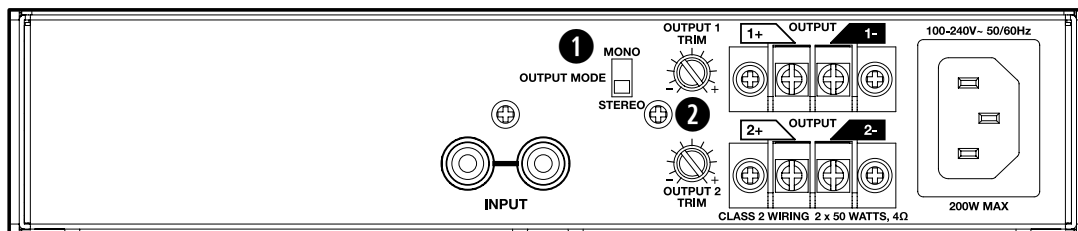
3.2 Front-panel controls and indicators



Note: Front-panel controls and indicators are identical on the FreeSpace® ZA 190-HZ amplifier.

- ❶ **OFF/ON switch**
Turns amplifier on or off.
- ❷ **POWER indicator**
Illuminates blue when amplifier is on.

3.3 Rear-panel controls



- ❶ **OUTPUT MODE switch (ZA 250-LZ only)**
Allows stereo input sources to be output in mono or stereo.
Note: The ZA 190-HZ is designed to sum both inputs channels to mono.
- ❷ **Output TRIM control**
Allows for attenuating individual loudspeaker outputs relative to the Master Level of the connected IZA 190-HZ/250-LZ amplifier. The adjustment range is -20 dB to 0 dB. This feature is helpful when one output is powering loudspeakers that need to be set at a lower volume level than loudspeakers on other outputs – including the outputs of an integrated zone amplifier.

3.4 Expanding an IZA system with a ZA amplifier

The Bose® FreeSpace® ZA 190-HZ/250-LZ Zone Amplifier makes system expansion easy. When a system design requires more loudspeakers than the FreeSpace IZA 190-HZ/250-LZ Integrated Zone Amplifier can support, the FreeSpace ZA 190-HZ/250-LZ Zone Amplifier is available to provide additional power.

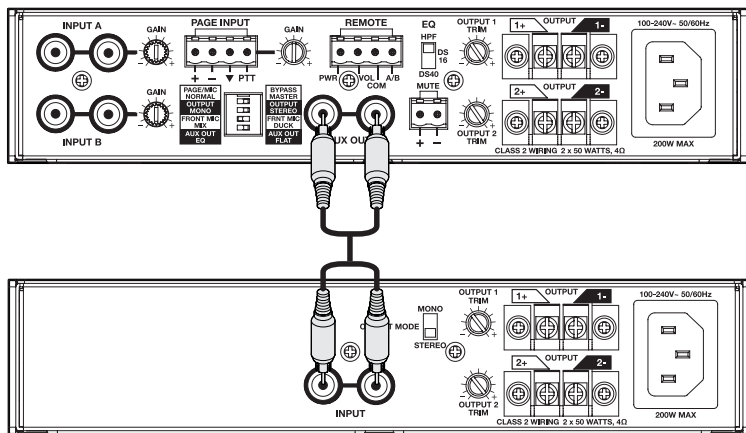
3.5 System operation

The IZA 190-HZ/250-LZ and ZA 190-HZ/250-LZ amplifiers will function together as one system – sharing the same music and paging sources. The IZA 190-HZ/250-LZ amplifier functions as the “master” of the ZA 190-HZ/250-LZ amplifier – determining which audio sources will be heard and controlling the overall Master Level volume.

3.6 Input connections

3.6.1 Connecting the IZA 190-HZ/250-LZ amplifier to the ZA 190-HZ/250-LZ amplifier

Connect the AUX OUT of the IZA 190-HZ/250-LZ amplifier to the INPUT of the ZA 190-HZ/250-LZ amplifier with the included RCA cable.



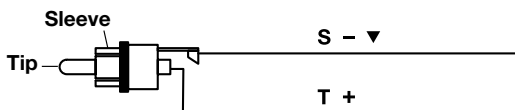
Note: It is recommended that when amplifiers are connected together, that both amplifier AC power cords are plugged into the same AC outlet.

3.6.2 Connecting the Zone Amplifier with other products

The zone amplifier can also be used as a standalone power amplifier with a front-end signal processor – including the Bose FreeSpace® DXA 2120 Digital Mixer/Amplifier, FreeSpace 4400 Business Music System, and ControlSpace® Engineered Sound Processor.

3.6.3 Line input connections

When using a front-end signal processor, the included RCA cable may need to be modified. The wiring diagram for the zone amplifier line input RCA connectors is provided below.



3.6.4 Loudspeaker connections

Refer to Section “2.4 Loudspeaker connections” on page 20 for instructions.

4. Installation and Placement

4.1 Importance of proper ventilation

For placement of the amplifier, keep the following in mind:

- Make sure that air can circulate freely around the amplifier for adequate ventilation. There are vents on the top, bottom, and sides.
- Do not cover or block amplifier vents.
- Do not enclose amplifier in a small space, such as a cabinet.
- Make sure the chassis is protected from heat and kept away from direct heat sources, such as heating vents and radiators.

Caution: Do not allow the chassis to exceed the maximum operating temperature of 40° C (122° F). Be aware of conditions in an enclosed rack that may increase the temperature above room-ambient conditions.

Note: If the amplifier becomes too hot, it will go into a thermal protection mode and mute all outputs.

4.2 Placing on a flat surface

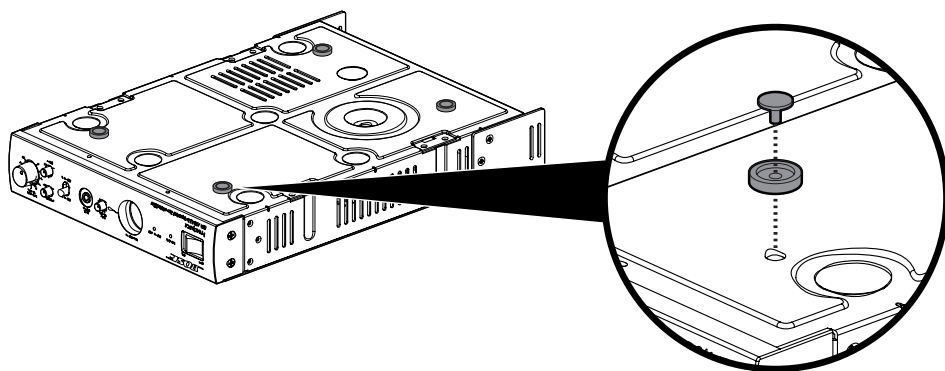
The amplifier can be placed on a flat, stable surface like a table, counter, or shelf. Plastic feet are included with the amplifier to protect the surface area, prevent the chassis from sliding, and allow heat to escape from the bottom vent.

Note: The included feet should always be used when placing amplifier on a flat surface to ensure proper ventilation.

4.2.1 Installing the feet on the amplifier

The included feet are comprised of two parts: a foot and a pin.

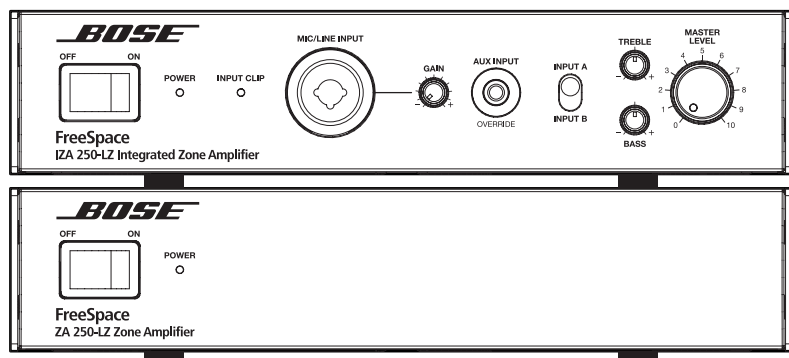
1. Place the amplifier upside-down on a flat, level surface on a protective covering to avoid scratching the top of the chassis.
2. Insert the four feet into the four holes on the bottom of the chassis.
3. Insert a pin into the hole on the foot.
4. Press down on the pin until the foot locks into place. Repeat for all four feet.



4.2.2 Stacking units

One amplifier can be stacked on top of another when there is limited space available on a table, counter, or shelf.

Note: The included feet always should be used on both amplifiers when stacking them to ensure proper ventilation.

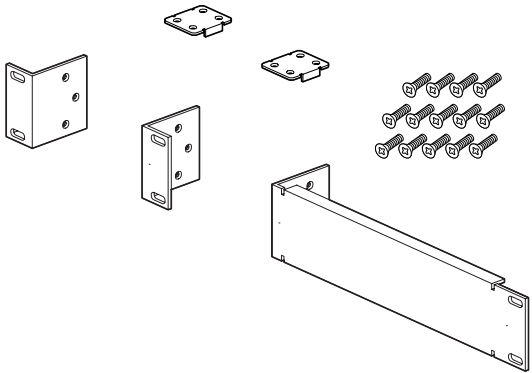


4.3 Mounting in standard rack with Rack Mount Kit Accessory

An accessory Rack Mount Kit is available from Bose for installing one or two FreeSpace® amplifiers in a standard 19" 1 RU electronics rack.

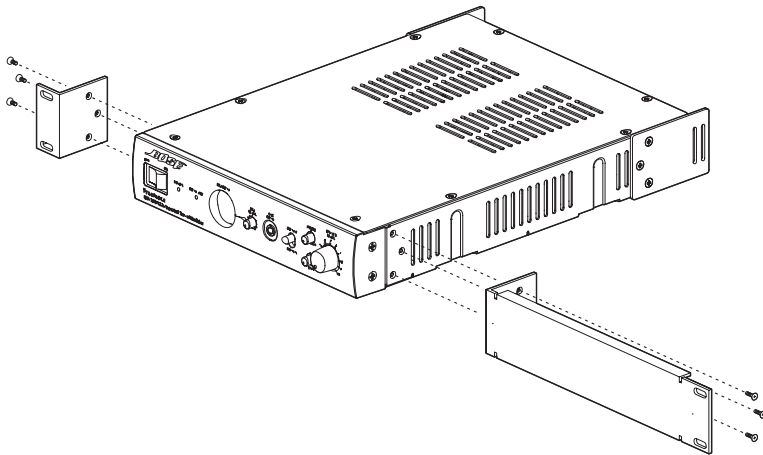
The Rack Mount Kit includes:

- (2) link brackets
- (2) short rack ears
- (1) long rack ear
- (14) M3 x 0.5, 6 mm length Phillips flat-head machine screws

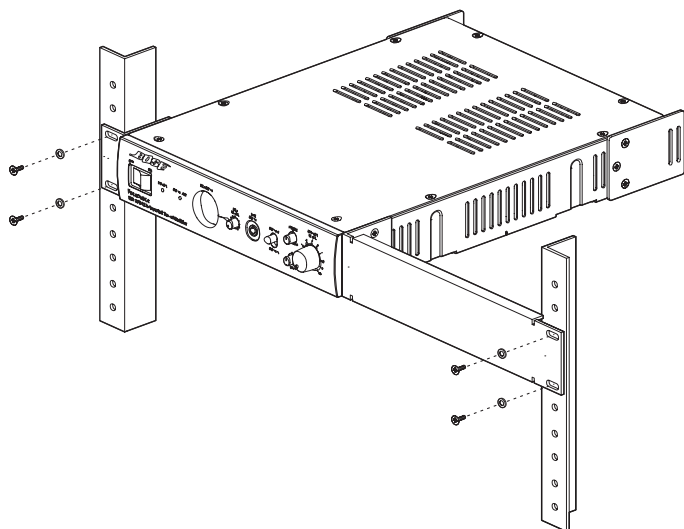


4.3.1 Mounting a single amplifier

1. Attach one short rack ear to one side of the amplifier chassis with three (3) of the included screws.
2. Attach the long rack ear to the other side of the amplifier chassis with three (3) of the included screws.

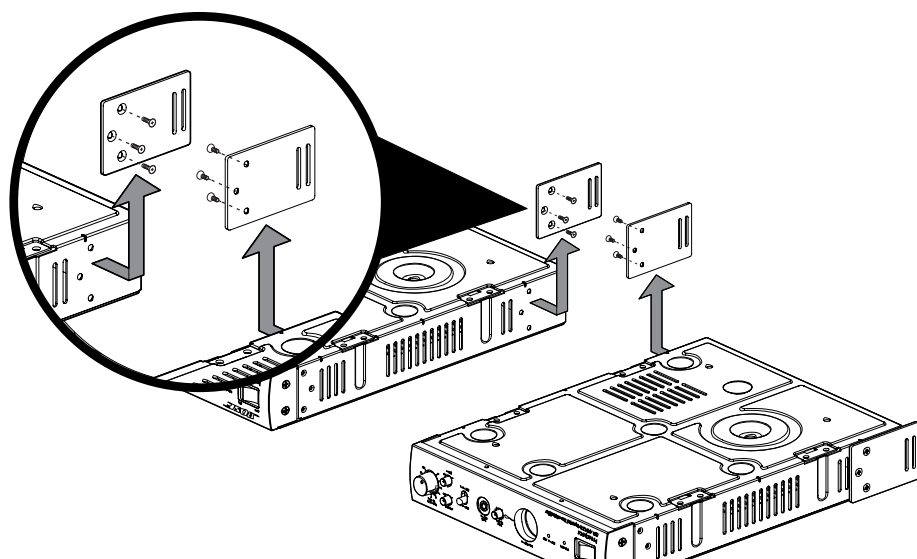


3. Mount amplifier in a rack with four (4) rack screws and washers (not included).

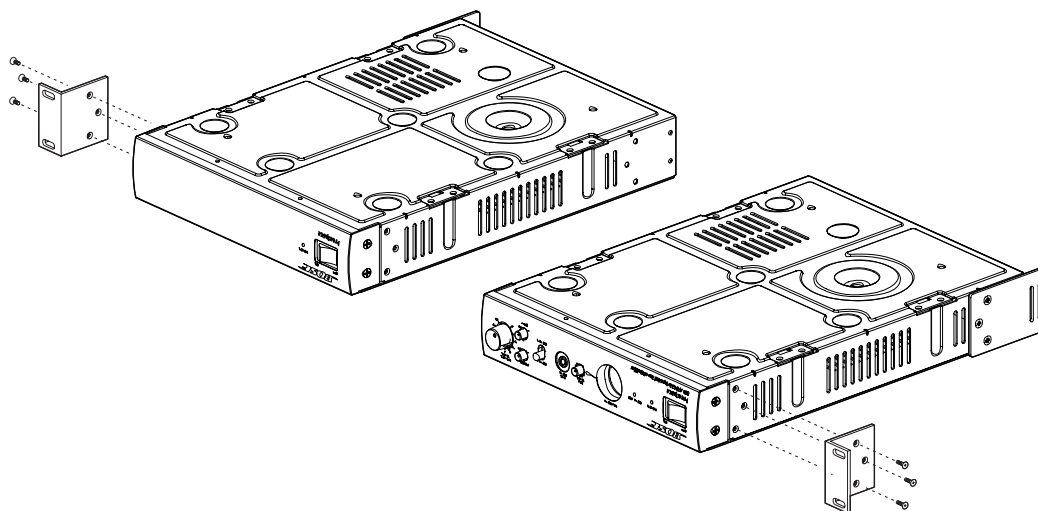


4.3.2 Mounting two amplifiers

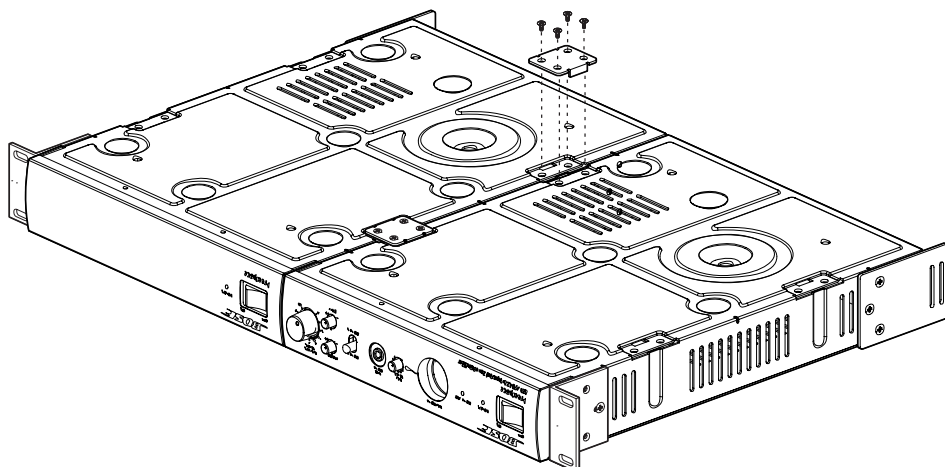
1. Remove rear rack ears from both amplifiers where they will meet in the middle. Then place the amplifiers upside-down on a flat, level surface on a protective covering to avoid scratching the top of the chassis.



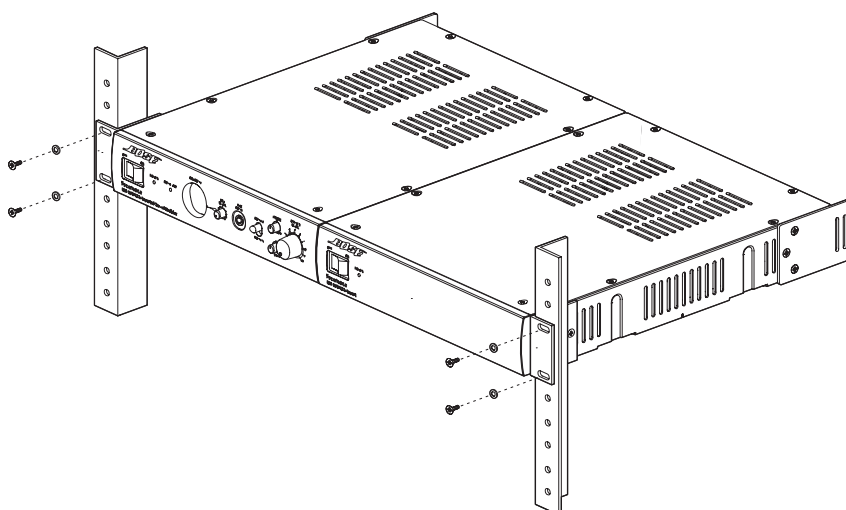
2. Attach a short rack ear to one side of each amplifier chassis with three (3) included screws.



- Place the amplifiers side by side and attach the two (2) link brackets to the amplifier chassis with four (4) included screws each.



- Mount amplifier in rack with four (4) rack screws and washers (not included).



4.3.3 Using the rear rack ears for strain relief

The slots on the rear rack ears can be used to provide strain relief with standard wire ties.

5. Troubleshooting

Problem	Solution
No power	<ul style="list-style-type: none"> • Turn on power. Blue LED on front-panel will be visible when power is on. • Make sure the power cord is plugged in. • Try a different AC outlet that is working with another piece of equipment.
Power is on, but no sound	<ul style="list-style-type: none"> • Make sure the input source is turned on. • Verify that there is an input signal from the source. • Check the cable connections from the source to the amplifier. • Ensure the desired source (A/B) is selected on the front panel. • If a user interface is connected to the Remote connector on the rear panel, make sure the desired source (A/B) is selected on user interface (user interface overrides the front-panel source select). • Make sure the Master Level control is turned up. • If a user interface is connected to the Remote connector on the rear panel, make sure the volume control on the user interface is turned up (user interface overrides the front-panel Master Level control). • Make sure a 1/8" (3.5 mm) TRS input cable is not connected to the Aux Input. The Aux Input has a mechanical override feature so if an input cable is connected to it the selected Input A/B source will be automatically overridden - even if the Aux Input audio source is not playing or connected. • If a contact closure is connected to the Mute connector on the rear panel, check the switch to ensure the mute function has not been triggered. • If a source is connected to the Page connector on the rear panel, make sure it has not been triggered. • Make sure loudspeakers are connected properly. • Check that loudspeaker taps are set correctly. • Check that the amplifier has adequate ventilation. Improper ventilation could cause the amplifier to go into protection mode and no audio will be heard. • Ensure that the output wiring is correct. A short circuit will cause the amplifier to go into protection mode and no audio will be heard.
Power is on, but sound is low	<ul style="list-style-type: none"> • Verify that the audio input source output is turned up to a nominal level. • Check the cable connections from the source to the amplifier. • Increase input level of source with Gain controls on amplifier. Turn Gain knob up until you start seeing red Input Clip LED on front-panel. Then turn Gain down until red LED Input Clip does not engage. • Make sure Output Trim controls on amplifier are not turned down too much. • If a user interface is connected to the Remote connector on the rear panel, make sure the volume control on the user interface is turned up (user interface overrides the front-panel Master Level control).
Sound is distorted	<ul style="list-style-type: none"> • Verify that the Input Clip red LED on the front-panel is not lit. If LED is red, reduce the source output level or reduce the input gain. • If the input source signal is clean, verify that the loudspeakers are not overdriven or damaged. Check the loudspeaker tap setting.
Unnatural sound	<ul style="list-style-type: none"> • Verify that the proper EQ preset is selected for the loudspeakers being used. Use HPF setting when using loudspeakers other than FreeSpace® DS 16/DS 40 loudspeakers. • Check the Treble and Bass controls on the front-panels. • Verify that the loudspeakers are wired correctly (+ to + and - to -).

Additional Resources

Visit us on the web at **pro.Bose.com** for more information, including specifications, technical literature, product warranty, parts and accessories, and global support contact information.

Americas

(USA, Canada, Mexico, Central America, South America)
Bose Corporation
The Mountain
Framingham, MA 01701 USA
Corporate Center: 508-879-7330
Americas Professional Systems,
Technical Support: 800-994-2673

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012-390800

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06172-7104-0

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