

**40-Watt
PA Amplifier**

Thank you for purchasing your 40-Watt PA Amplifier from **RadioShack**. It gives you the versatility and power you need in a professional sound system. Your amplifier's wide frequency response easily handles amplification of voice and music. Use it in meeting halls and auditoriums, at sports events, in schools, and in the office for paging systems—anywhere you need to deliver special announcements with excellent sound.



What's Included

PA Amplifier AC Power Cord
Fuse (Installed) DC Power Cord
User's Guide

Please read this user's guide before installing, setting up, and using your new amplifier.

www.radioshack.com

Contents

Quick Start 3

A Look at Your Amplifier..... 6

 Front View.....6

 Rear View7

Preparation..... 8

 Placing the Amplifier8

 Placing Speakers8

 Presetting the Controls.....8

 Presetting the Audio Input Sources.....8

 Presetting the Amplifier.....8

 Tips for Speaker Connection9

 Total Speaker Impedance.....9

 Proper Phasing9

 About Speaker Terminals9

 Determining the Speaker Wire Length9

Connections 10

 Connecting Speaker Wires to the Amplifier.....10

 Connecting One Speaker.....10

 Connecting Two Speakers in Series11

 Connecting Two Speakers in Parallel11

 Connecting Four Speakers in Series and Parallel Combination12

 Connecting Speakers with Transformers13

Troubleshooting 15

Specifications 16

Care and Maintenance..... 16

 Replacing the DC Power Cord's Fuse 16

Safety 17

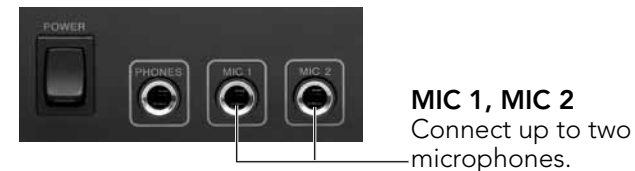
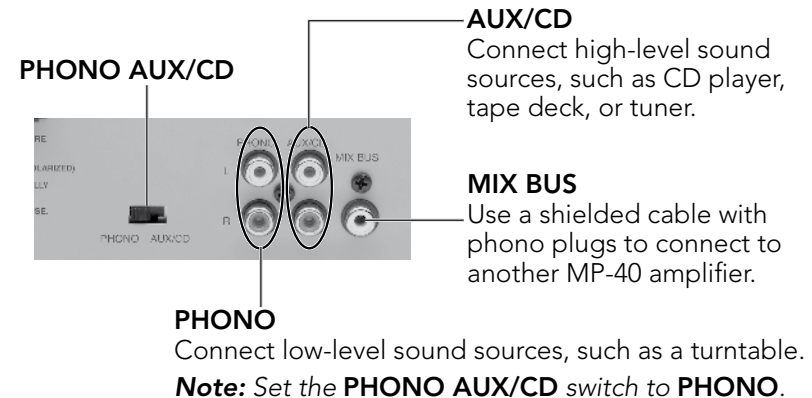
Do Stuff 19

Limited Warranty..... 20

Quick Start

Follow these steps to quickly set up your PA Amplifier. For detailed operation instructions, see Pages 6-14.

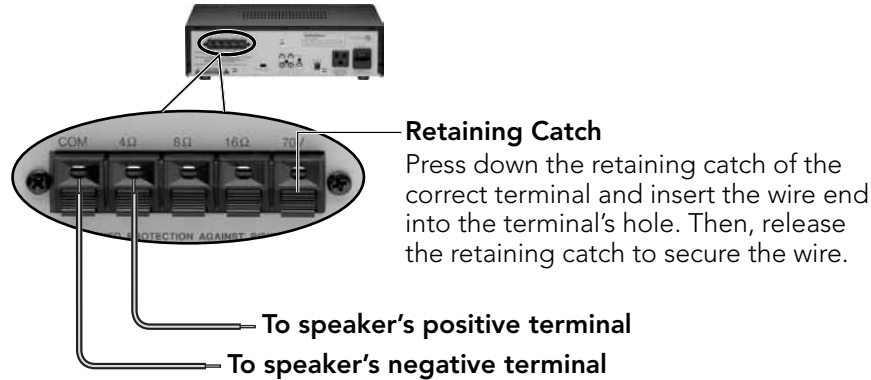
Step 1 Connect optional components (microphones, tuners, turntables, CD players, tape decks, or extra amplifier) to expand your system.



Caution: Before connection, turn off your amplifier and components and set their volume controls to minimum. To prevent hum and other noise, use low-capacitance shielded cables.

Step 2 Connect speakers to your amplifier

Connect your speakers together in series, in parallel, or in series and parallel combination. Then connect the speaker's negative terminals to amplifier's **COM** terminal, and their positive terminals to the amplifier's **4Ω, 8Ω, 16Ω, or 70V** terminal.



Step 3 Power your amplifier

To use AC power, use the AC power cord to connect your amplifier's **AC IN** jack to a standard wall outlet.

To use DC power, use the DC power cord to connect your amplifier's **DC 12V IN** jack to a vehicle's 12V accessory socket.



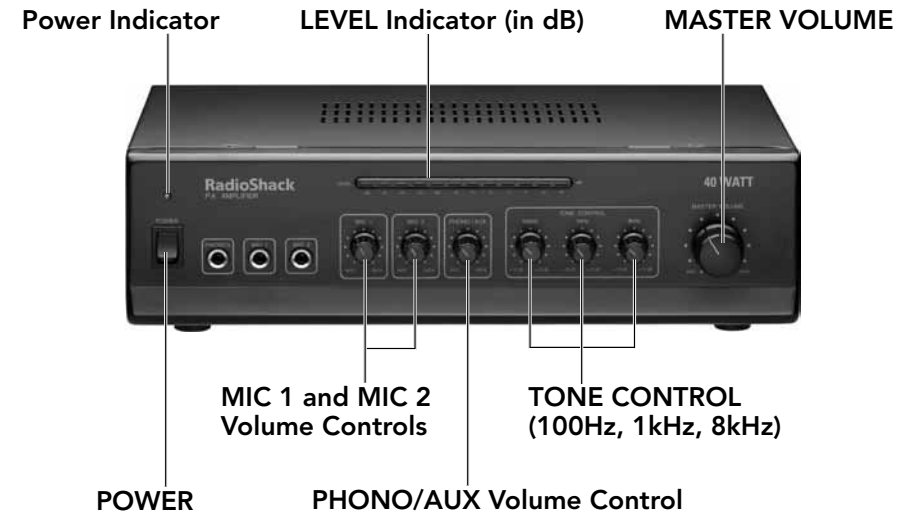
Cautions:

- Your vehicle must have a negative ground electrical system. If you are not sure of this, check with your vehicle dealer.
- Disconnect the AC power cord before you connect the DC power cord. Likewise, disconnect the DC power cord before you connect the AC power cord.

Step 4 Use your amplifier

- 1) Turn on the **POWER** switch. The power indicator lights.
- 2) Start the input sound source.
- 3) Set **MASTER VOLUME** to about the middle position. The **LEVEL** Indicator flashes on from left to right indicating the sound level.

- 4) Adjust the following controls to the desired volume and balance: **MIC 1, MIC 2, PHONO/AUX, 100Hz, 1kHz, and 8 kHz.**
- 5) When you get the desired balance, adjust **MASTER VOLUME** to the desired level.



Step 5 Monitor the sound source

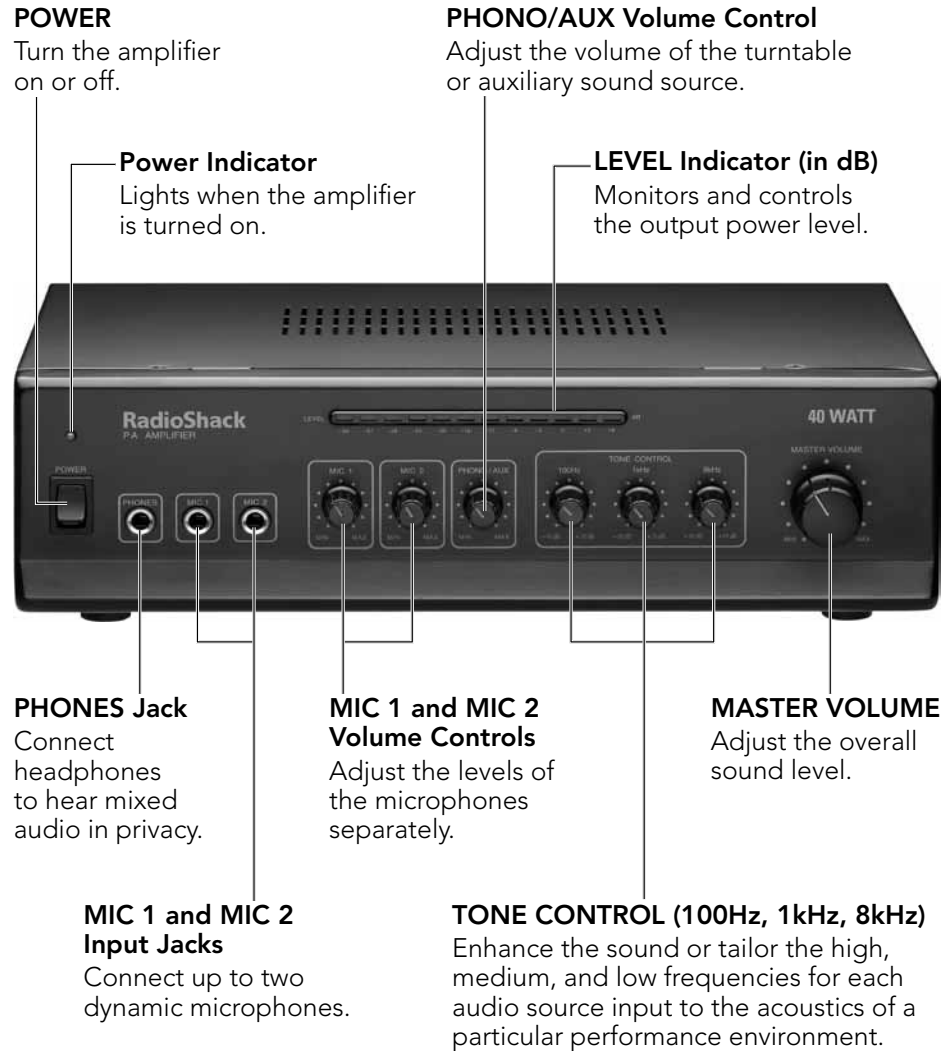
Insert the 1/4" (6.35 mm) plug of either mono or stereo headphones (not supplied) to the **PHONES** jack. Headphones help easily check and adjust the balance of the sound sources.



A Look at Your Amplifier

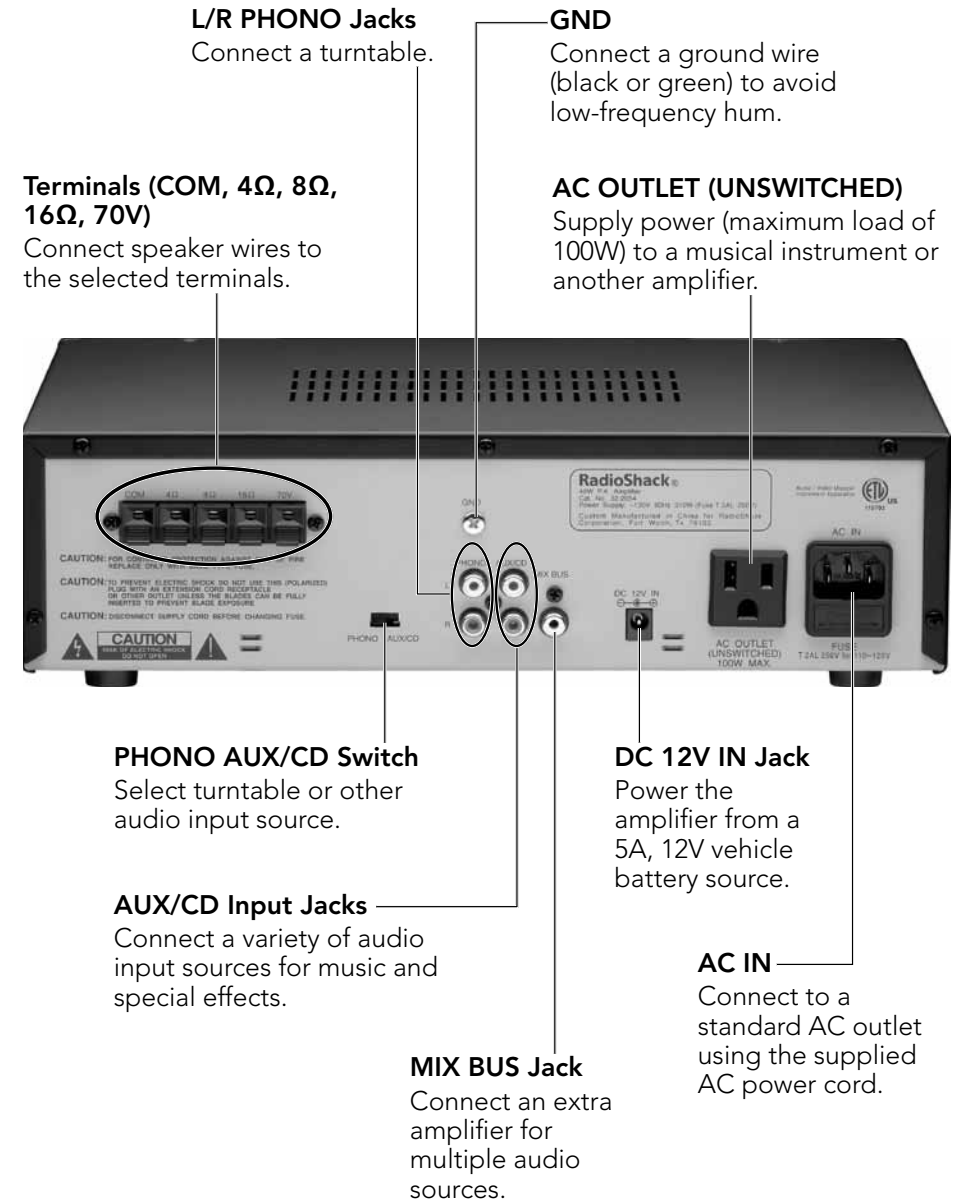
A Look at Your Amplifier

Front View



A Look at Your Amplifier

Rear View



Preparation

Placing the Amplifier

Put your amplifier to a place with adequate ventilation. Do not put it on thick carpeting (which can restrict air flow) or near a heat source, such as a heat vent or radiator (which can cause overheating).

Placing Speakers

Speaker placement depends on your room's size and arrangement. We recommend you play a wide-range recording and experiment with speaker placement until you find the locations that result in best sound. For best results, point the speakers toward the listeners, especially if you place the speakers far apart so their coverage areas overlap. This prevents dead spots (areas not covered by the speakers' sound). Position the speakers slightly above the level of the listeners' heads, and be sure you have determined the correct speaker impedance (see "Total Speaker Impedance" on Page 9).

Presetting the Controls

Before you begin making connections or using your amplifier, preset the audio input and amplifier controls to avoid overdriving a channel or producing extremely loud, unpleasant sound.

Presetting the Audio Input Sources

Set the audio input controls to these levels.

Audio Device	Control	Setting
Turntable	Power	Off
Tape Deck	Power	Off
CD Player	Power	Off
Amplifier Receiver	Power, Tone	Off, Flat

Presetting the Amplifier

After you turn on the amplifier or change the program source, set the controls to a comfortable listening level.

Warning: To prevent possible hearing damage, set the amplifier's controls to the levels below.

Control	Setting
Power	Off
MIC 1, MIC 2, PHONO/AUX	MIN
100 Hz, 1 kHz, 8 kHz	0 dB (mid-position)
MASTER VOLUME	MIN

Tips for Speaker Connection

You can connect one or more 4 Ω , 8 Ω , or 16 Ω speakers (not supplied) to the amplifier, with or without transformers. To ensure equal volume from each speaker, all the speakers connected (in series or parallel) without line transformers should have the same impedance rating.

Total Speaker Impedance

Before you connect speakers to the amplifier, determine the speaker connection mode: in series, in parallel, or in series and parallel combination, then determine the total speaker impedance.

For connections in series, the total impedance is the sum of the impedances of all the speakers connected. For example, if you connect three 4 Ω speakers in series, the total speaker impedance is 12 Ω .

For connections in parallel, the total impedance is the quotient of the impedance of one speaker divided by the number of speakers. For example, if you connect two 8 Ω speakers in parallel, the total speaker impedance is 4 Ω .

Important: If you connect more than two speakers in series only or in parallel only, be sure the total impedance does not exceed the amplifier's maximum impedance (16 Ω) or fall below the minimum impedance (4 Ω). A total speaker impedance higher than 16 Ω or lower than 4 Ω can damage your amplifier.

Note: You can achieve a proper total speaker impedance with a combination of connections in series and in parallel.

Proper Phasing

Proper phasing is important when you use more than one speaker in the same room or area. Out-of-phase speakers can lose up to half of their potential volume, and can have a significantly decreased bass effect. Proper phasing occurs when speakers are set to allow sound to flow in the same direction.

About Speaker Terminals

Most speaker terminals are color-coded or have a symbol that indicates the terminal's polarity: red (+) = positive; black (-) = negative. Phasing is correct when you connect this way: speaker's negative terminal to amplifier's COM terminal (-), speaker's positive terminal to amplifier's other terminals.

Determining the Speaker Wire Length

Use the shortest length of wire possible to connect the speakers. After placing the speakers in the desired locations, determine the wire length and choose the appropriate gauge size.

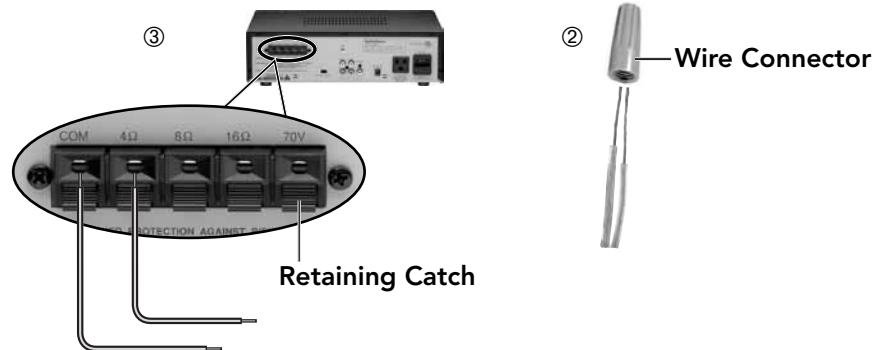
- If wire length is 25 feet (7.6 meters) or less, wire gauge is 18.
- If wire length is over 25 feet, wire gauge is 16.

If you connect speakers without transformers, the speaker wire should be no longer than 50 feet (15.24 meters).

Connections

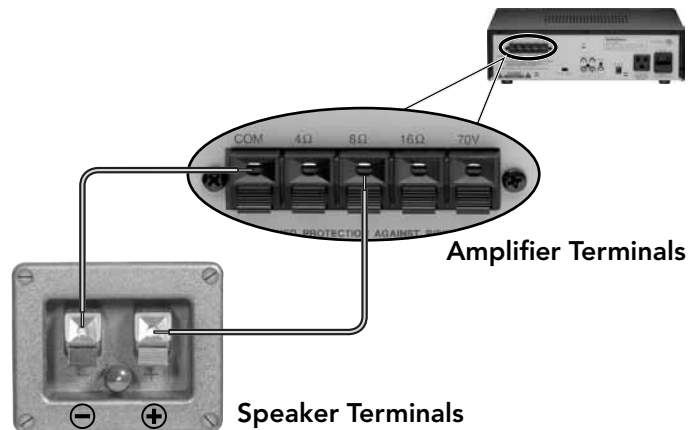
Connecting Speaker Wires to the Amplifier

1. Use a wire stripper (not supplied) to remove about half inch of the insulation from the end of the speaker wire.
2. Using a wire connector (not supplied), twist the exposed wire to secure all the wire strands. Remove the wire connector for step 3.
3. Press and hold the retaining catch of the correct terminal on the amplifier and insert the wire into the terminal's hole. Release the retaining catch to secure the wire.



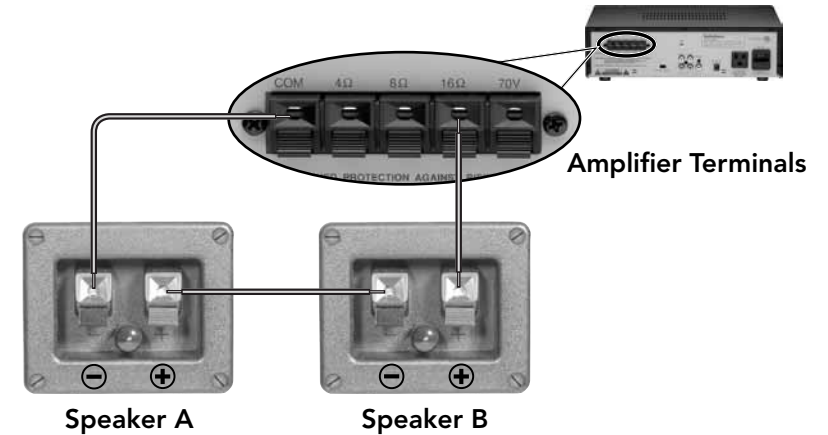
Connecting One Speaker

Connect the speaker's negative (-) terminal to the amplifier's **COM** terminal, and the speaker's positive (+) terminal to the amplifier's **4Ω**, **8Ω**, or **16Ω** terminal.



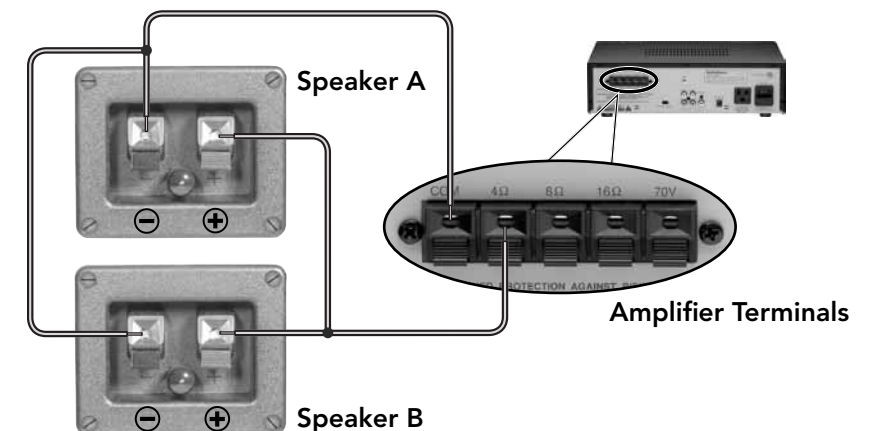
Connecting Two Speakers in Series

- Connect the two speakers together, Speaker A's positive terminal to Speaker B's negative terminal.
- Connect Speaker A's negative terminal to the amplifier's **COM** terminal.
- Connect Speaker B's positive terminal to the amplifier's **4Ω**, **8Ω**, or **16Ω** terminal.



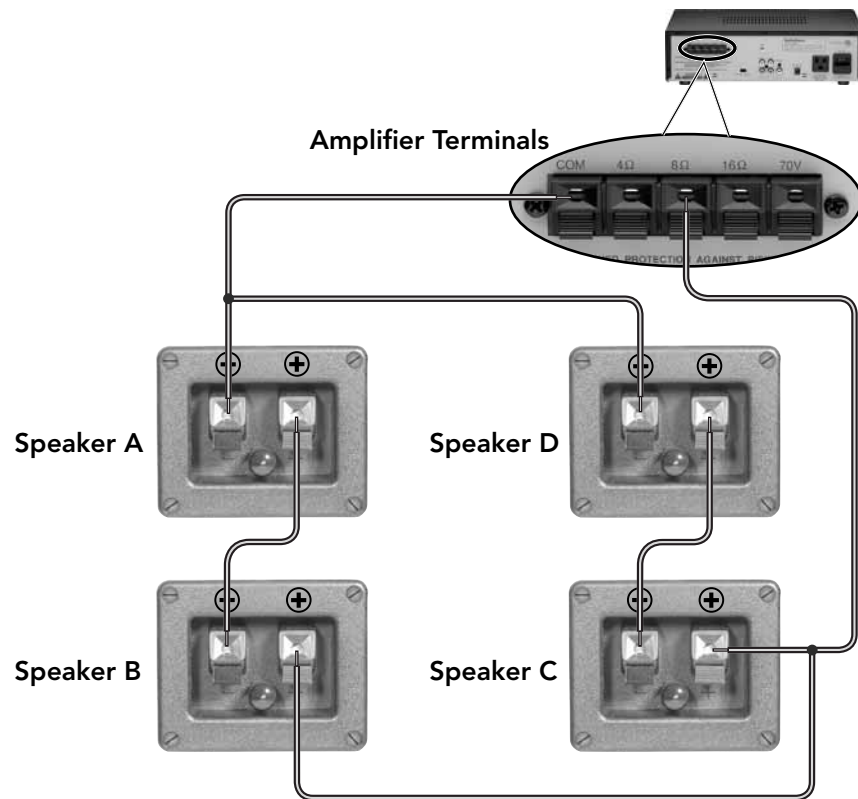
Connecting Two Speakers in Parallel

- Connect the negative terminals of the two speakers together, and then connect both wires to the amplifier's **COM** terminal.
- Connect the positive terminals of the two speakers together, and then connect both wires to the amplifier's **4Ω**, **8Ω**, or **16Ω** terminal.



Connecting Four Speakers in Series and Parallel Combination

1. Group the four speakers into two pairs (A and B, C and D). Connect each pair of speakers in series: A's positive terminal to B's negative terminal, C's negative terminal to D's positive terminal. If you use all 8Ω speakers, the total impedance of a pair is 16Ω .
2. Connect the two pairs together in parallel: A's negative terminal to D's negative terminal, B's positive terminal to C's positive terminal. If you use all 8Ω speakers, the total impedance of the four speakers thus connected is 8Ω ($(8+8)/2=8$).
3. Connect the negative terminals of Speakers A and D to the amplifier's **COM** terminal, and the positive terminals of Speakers B and C to the amplifier's **4 Ω** , **8 Ω** , or **16 Ω** terminal.



Connecting Speakers with Transformers

For best results when using two or more speakers, connect a line transformer (not included) to each speaker. Transformers allow you to:

- Connect speakers with different impedances without causing output differences between the speakers.
- Add or remove a speaker from the PA system without having to recalculate the entire system's impedance.
- Reduce signal loss when using a speaker wire over 50 feet (15.24 meters) long.

Line transformers have primary connection taps on the input side, which are rated in watts, and secondary connection taps on the output side, which are rated in ohms. Before you connect speakers, be sure the total wattage of the primary taps you use does not exceed the amplifier's maximum output power rating (40W).

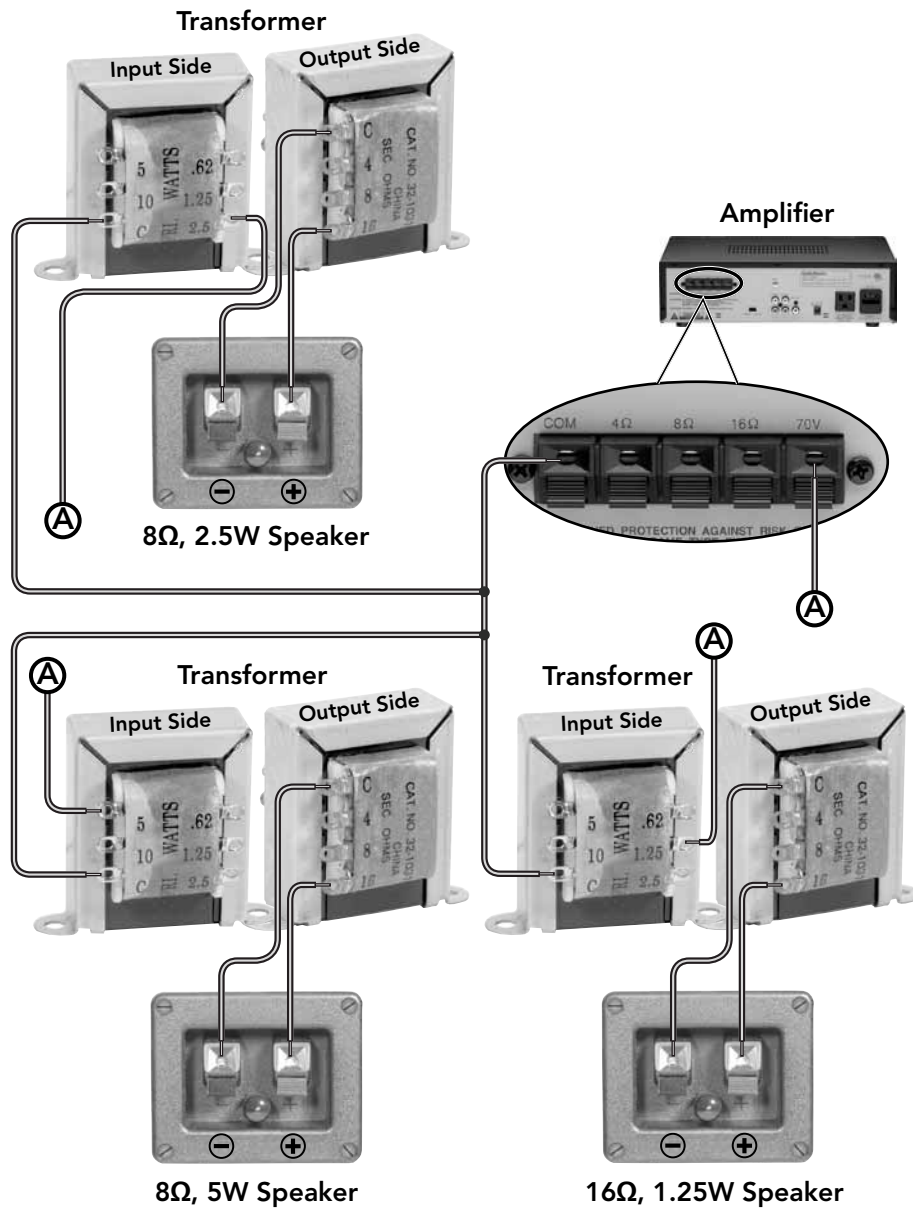
The following illustration shows how to connect three speakers with transformers.

- Connect the amplifier's **70V** terminal to the primary taps (10, 5, 2.5, 1.25, or 0.62 watts) of the transformer.
- Connect the amplifier's **COM** terminal to the C (common) taps on the Input Side of the transformer.
- Connect the speaker's positive terminal to the transformer's **4 Ω** , **8 Ω** , or **16 Ω** tap (whichever matches the total speaker impedance).
- Connect the speaker's negative terminal to the C tap on the Output Side of the transformer.

Notes:

- Do not connect multiple wires to the amplifier's **70V** and **COM** terminals.
- Wires with the mark **A** are to be connected together.
- Usually, a speaker in a system uses the same wattage tap of its transformer. If you want a particular speaker to have a higher volume level, connect the wire from the amplifier's **70V** terminal to a higher wattage tap on the transformer.

Illustration on Page 14



Troubleshooting

Problem	Cause	Solution
No power	Sound sources or speakers are not properly connected.	Check all connections.
No sound	The MASTER VOLUME , MIC 1 , MIC 2 , PHONO/AUX , 100 Hz , 1 kHz , 8 kHz controls are set to minimum.	Adjust the volume controls to desired settings.
	Sound sources or speakers are not properly connected.	Check all connections.
	A microphone or cable might be faulty or loose.	Check all microphones and cables.
	The speaker's wires might be of the wrong impedance.	Make sure all speakers connected have the same impedance rating.
	The speaker's wires might be too small.	Make sure the speaker's wires are the correct gauge according to their lengths.
	The amplifier might have shut down.	Turn off the amplifier and let it cool down. Make sure the amplifier is properly ventilated, and then turn it back on.
Feedback	Microphones or speakers are too close together.	Reposition the microphones and speakers.

Specifications

Output Power (at THD 10%, 4Ω Load 1kHz).....	40W
Total Harmonic Distortion (at 5 Watts, 4Ω, 1kHz, with Band Pass Filter)	
MIC	0.50%
AUX	0.10%
PHONO	0.30%
Input Sensitivity (at 10%, THD, 1kHz)	
MIC	2.5 mV
AUX	150 mV
PHONO	3.5 mV
Signal to Noise Ratio with A-WTD	
MIC	60 dB
AUX	80 dB
PHONO	70 dB
Hum and Noise at 4Ω	
At MASTER VOLUME MIN.....	1 mV
At MASTER VOLUME MAX	50 mV
Power Supply	120V AC, 60Hz; or 12V DC
Dimensions (W×D×H)	12.8 × 8.9 × 3.3 in (324 × 226 × 85 mm)

Specifications are subject to change and improvement without notice. Actual product may vary from the images found in this document.

Care and Maintenance

- Keep the amplifier dry; if it gets wet, wipe it dry immediately.
- Use and store the amplifier only in normal temperature environments.
- Handle the amplifier carefully; do not drop it.
- Keep the amplifier away from dust and dirt, and wipe it with a damp cloth occasionally to keep it looking new.
- Modifying or tampering with the amplifier's internal components can cause a malfunction and might invalidate its warranty. If your amplifier is not performing as it should, take it to your local **RadioShack** store for assistance.





Replacing the DC Power Cord's Fuse

If the amplifier does not operate from a 12V battery source, check the fuse in the DC power cord plug. If the fuse is blown, remove the cap of the plug and replace the fuse with one of the proper type and rating (6A, 250V).

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Clean only with dry cloth.
6. Only use attachments/accessories specified by the manufacturer.
7. Do not use this product near water.
8. 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.
9. Exercise caution when moving any product and cart combination. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.
10. Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
11. Use only the type of power source indicated on the label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. For products intended to operate on battery power, or other sources, refer to the operating instructions.
12. 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 wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
Alternate Warnings: This product is equipped with a three-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If your are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.
13. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
14. **Protective Attachment Plug:** The product is equipped with an attachment plug having overload protection. This is a safety feature. See Instruction Manual for replacement or resetting of protective device. If replacement of the plug is required, be sure the service technician has used a replacement plug specified by the manufacturer that has the same overload protection as the original plug.
15. If an outside antenna is connected to the receiver, be sure the antenna system is grounded so as to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the mast and supporting structure, grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna-discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.
16. Unplug this apparatus during lightning storms or when unused for long periods of time.

17. An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.
18. Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.
19. Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.
20. Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
21. Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - a) When the power-supply cord or plug is damaged.
 - b) If liquid has been spilled, or objects have fallen into the product.
 - c) If the product has been exposed to rain or water.
 - d) If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
 - e) If the product has been dropped or damaged in any way.
 - f) When the product exhibits a distinct change in performance – this indicates a need for service.
22. **Replacement Parts:** When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.
23. Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.
24. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

<p>WARNING: To reduce the risk of fire or shock hazard, do not expose this product to rain or moisture.</p>	
	<p>CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN</p> 
<p>CAUTION: To reduce the risk of electric shock, do not remove cover or back. No user-serviceable parts inside. Refer servicing to qualified personnel.</p>	
	<p>This symbol is intended to alert you to the presence of un-insulated dangerous voltage within the product's enclosure that might be of sufficient magnitude to constitute a risk of electric shock. Do not open the product's case.</p>
	<p>This symbol is intended to inform you that important operating and maintenance instructions are included in the literature accompanying this product.</p>

Do More with your Amplifier



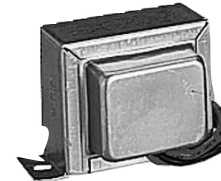
7.5-Watt Amplified Speaker

- Amplify over loud noises



Ceiling Speaker

- Easy to install
- Useful for large audience occasions



Line Transformer

- Connect speakers with different impedances
- Freely add or remove a speaker from the PA system
- Reduce signal loss



Headphones

- Avoid disturbing others
- Easily check and adjust balance of sound sources



Wire Connector

- Secure wire strands



Speaker Wire

- Provide less loss and lower attenuation



Dynamic Microphone

- Ideal for high noise background

Limited Warranty

This product is warranted by **RadioShack** against manufacturing defects in material and workmanship under normal use for one (1) year from the date of purchase from **RadioShack** company-owned stores and authorized **RadioShack** franchisees and dealers. EXCEPT AS PROVIDED HEREIN, **RadioShack** MAKES NO EXPRESS WARRANTIES AND ANY IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE DURATION OF THE WRITTEN LIMITED WARRANTIES CONTAINED HEREIN. EXCEPT AS PROVIDED HEREIN, **RadioShack** SHALL HAVE NO LIABILITY OR RESPONSIBILITY TO CUSTOMER OR ANY OTHER PERSON OR ENTITY WITH RESPECT TO ANY LIABILITY, LOSS OR DAMAGE CAUSED DIRECTLY OR INDIRECTLY BY USE OR PERFORMANCE OF THE PRODUCT OR ARISING OUT OF ANY BREACH OF THIS WARRANTY, INCLUDING, BUT NOT LIMITED TO, ANY DAMAGES RESULTING FROM INCONVENIENCE, LOSS OF TIME, DATA, PROPERTY, REVENUE, OR PROFIT OR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, EVEN IF **RadioShack** HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

In the event of a product defect during the warranty period, take the product and the **RadioShack** sales receipt as proof of purchase date to any **RadioShack** store. **RadioShack** will, at its option, unless otherwise provided by law: (a) correct the defect by product repair without charge for parts and labor; (b) replace the product with one of the same or similar design; or (c) refund the purchase price. All replaced parts and products, and products on which a refund is made, become the property of **RadioShack**. New or reconditioned parts and products may be used in the performance of warranty service. Repaired or replaced parts and products are warranted for the remainder of the original warranty period. You will be charged for repair or replacement of the product made after the expiration of the warranty period.

This warranty does not cover: (a) damage or failure caused by or attributable to acts of God, abuse, accident, misuse, improper or abnormal usage, failure to follow instructions, improper installation or maintenance, alteration, lightning or other incidence of excess voltage or current; (b) any repairs other than those provided by a **RadioShack** Authorized Service Facility; (c) consumables such as fuses or batteries; (d) cosmetic damage; (e) transportation, shipping or insurance costs; or (f) costs of product removal, installation, set-up service adjustment or reinstallation.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

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12/99



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Go to www.ecyclingcentral.com to find a recycle location near you.

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