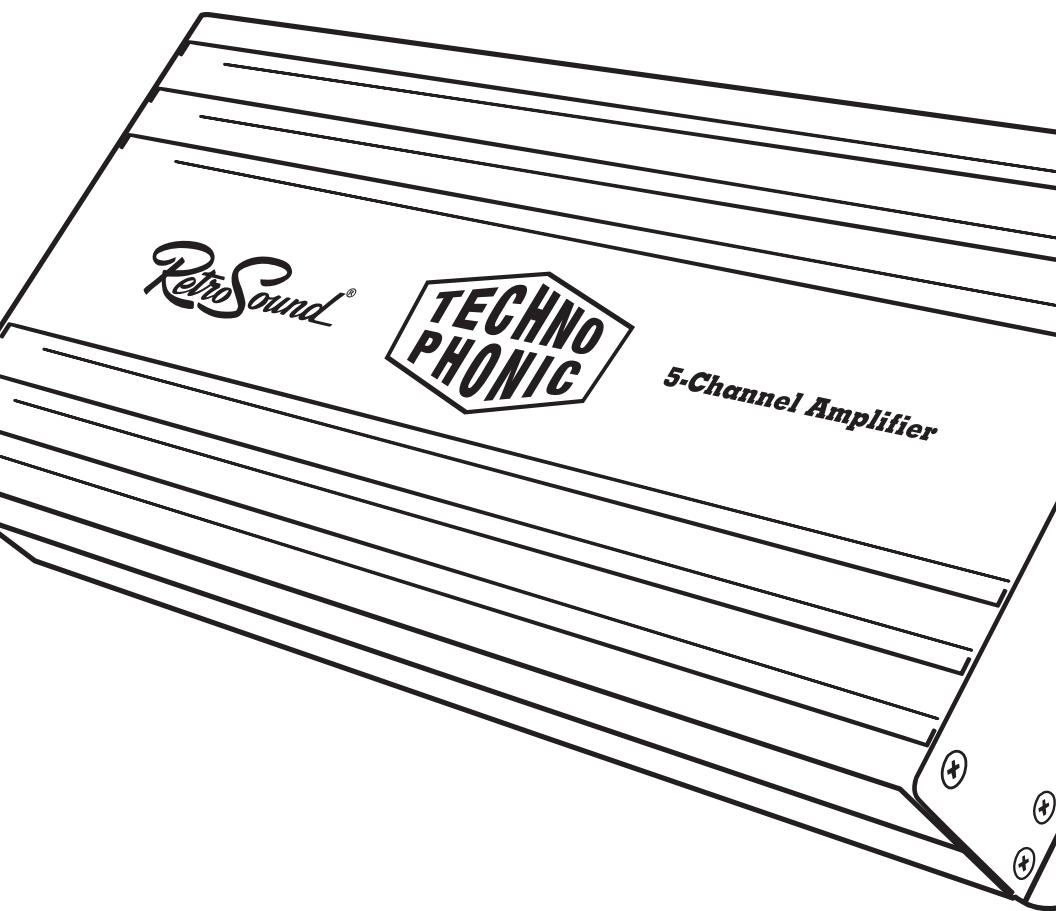


Technophonic

5-Channel Amplifier

USER'S MANUAL



MODERN SOUND FOR YOUR CLASSIC

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Welcome

Thank you for purchasing a RetroSound® Technophonic 5-channel amplifier.

General Features

- 5-channel amplifier
- Full-range Class D digital circuitry
- 65-watt RMS x 4 channels full-range @ 4 ohms
(95-watts RMS x 4 @ 2 ohms)
- 225-watts RMS x 1 channel subwoofer @ 4 ohms
(330-watts RMS @ 2 ohms)
- Selectable input mode switch for 2, 4, and 5 channel operation
- Bridgeable
- 2-ohm and 4-ohm stable
- Built-in variable low pass and high pass filters
- Bass boost (0-12dB) and remote gain control
- Advanced circuitry and thermal protection
- Easily connects to your RetroSound radio
- Works with any aftermarket radio with low-level RCA outputs
- Dimensions: 12.9 in x 5.3 in x 1.87 in (33 cm x 13.4 cm x 4.75 cm)
- Fuse Rating: 60-amp

The information enclosed in this user's manual is to be used as a guide to assist you with installation and operation of your amplifier. This guide does not cover every installation possibility, vehicle, or aspect of the installation process.

Retro Manufacturing, LLC, RetroSound®, or its subsidiaries assume no responsibility for any installation. Due to continuing improvements, features and specifications are subject to change without notice. This manual may be updated from time to time without notice.

Visit our website for the latest updates: help.retromanufacturing.com.

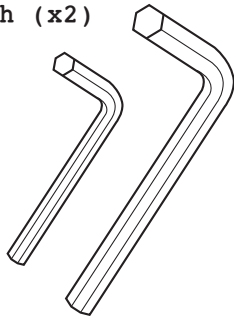
What's in the box

The items shown below are packaged with your Techno-
phonic amplifier.

Techno- phonic Amplifier



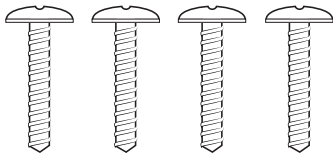
Hex Wrench (x2)



Remote Gain Control

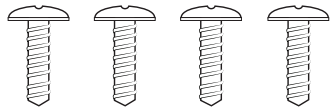


Large Metal Screw (x4)



(for mounting the amplifier)

Small Metal Screw (x4)



(for mounting the Remote Gain Control)

Precautions

PLEASE OBSERVE THESE PRECAUTIONS WHEN INSTALLING AND USING THIS UNIT:

This user's manual does not cover all possible installation scenarios. Please be sure to follow the instructions carefully while attempting installation. If you feel you cannot install this unit yourself, consult with a local car audio professional.

Retro Manufacturing, LLC is not liable for any problems resulting from improper installation of the unit.

If you have questions about installing your amplifier, contact us at **tech@retromanufacturing.com** or visit our help site at help.retromanufacturing.com

- **IMPORTANT:** This amplifier is designed for operation in vehicles with 12 volt DC negative ground systems only.
- Disconnect the negative (-) battery terminal from your vehicle's battery before installation.
- Ensure adequate clearance around the amplifier's heat sinks for proper air flow. If you're mounting the amplifier near the radio, always maintain at least 2 to 5 inches of clearance between the radio and amplifier.
- Never mount the amplifier directly to the radio body.
- Never install the unit in a location where it interferes with your field of vision.
- Never install the unit in a place in which the amplifier could injure the driver or passengers if the vehicle suddenly stops.
- Never install the unit upside down. Mounting upside down will compromise heat dissipation and engage its protection circuitry.
- If the unit does not turn on, check all wiring first. Then check the fuse in your vehicle's fuse panel and the two fuses in the unit. If either fuse has failed, eliminate the cause of the failure, and replace the fuse with one prescribed for this unit.

Precautions

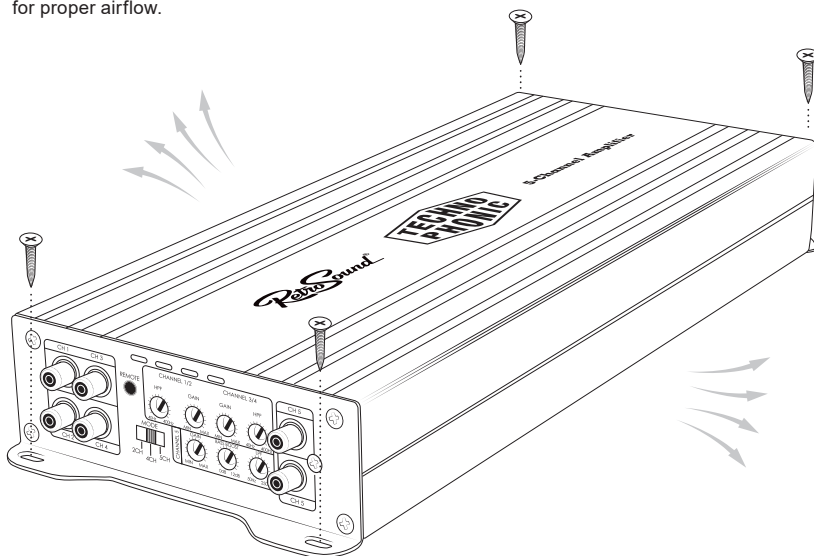
- Do not disassemble or modify the unit or attempt to repair it yourself. If your unit is not working properly please consult your dealer or Retro Manufacturing, LLC.
- This unit is not designed for a marine environment. Please do not use the unit where it will be exposed to moisture or excessive dust. Exposure to moisture will damage the unit and void your warranty.
- Use caution when routing wires to prevent them from being caught in the vehicle's chassis. Screws and moving parts such as seat rails can cause damage to the wiring if improperly routed.
- Never splice into the power lead to supply other equipment with power.
- After installation and wiring, always check the normal operation of other electrical equipment.
- Make sure that no wires interfere with driving or getting in and out of the vehicle. Insulate all exposed wires to prevent short-circuiting or electric shock.
- Keep the volume of your radio at a level that allows you to hear outside noises, such as emergency sirens and train crossing warnings. Prolonged exposure to high volume levels may also result in hearing loss.

The following tools may be required for your installation:

- Electric Drill with Bits
- Phillips Screwdriver
- Standard Screwdriver
- Wire Strippers
- Wire Crimper
- Utility Knife
- Digital Multi-Meter

Mounting The Amplifier

Leave 2" to 5" of clearance
for proper airflow.



It is best to mount the amplifier in a location that allows air to freely circulate around it and allows access to the end panel controls for adjustments. Although both thermal and overload protection are built in, if the amplifier overheats it will reduce its power output to maintain operation.

Find a dry, clear and well-ventilated area in which to mount the amplifier. The area should be free of any obstructions that might block air flow to the amplifier. It should be protected from exposure to direct sunlight.

You may use the amplifier as a template to mark the four screw locations with a felt-tip marker. Set the amplifier aside before drilling the mounting holes. Use caution to make certain there are no objects behind the installation area that may become damaged by drilling. Use the four large metal screws to mount the amplifier. Make sure the amplifier has at least two to five inches of clearance above the heatsink to allow for heat dissipation.

Power and Ground Connections

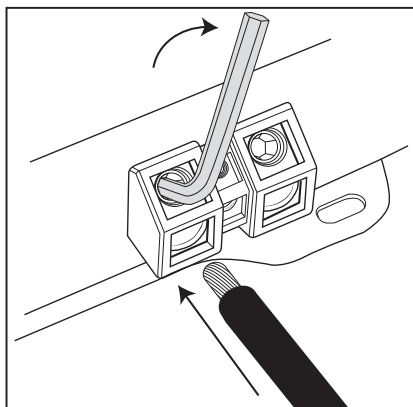
Electrical System Test

The Technophonic amplifier is designed to work within a range of 12 volts to 14.4 volts DC. Before connecting any wiring, use a multi-meter to test the vehicle's electrical system for adequate power supply. First, check the voltage at the battery with the ignition in the off position. The multi-meter should read no less than 12 volts. Next, check voltage at the battery with the engine running. The multimeter should show a reading between 12 and 14.4 volts. If your vehicle's electrical system does not fall within these parameters, consult an auto electrician before proceeding with the installation.

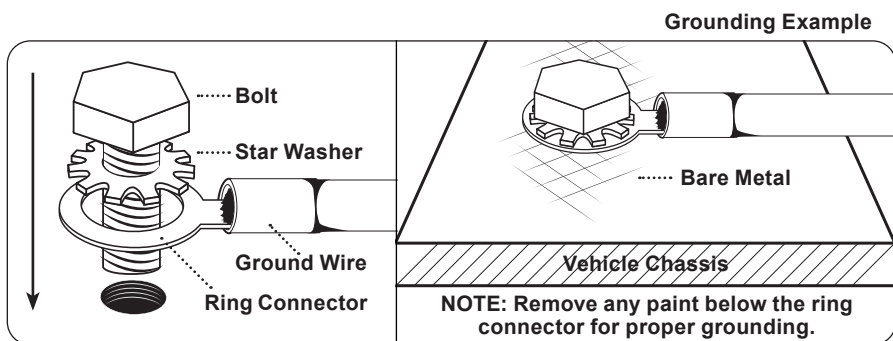
The Technophonic utilizes a very efficient digital Class D design. For most installations 8 gauge power and ground primary wire is suitable. For runs longer than 13 feet, use a thicker gauge wire.

Making Proper Speaker Connections

The Technophonic amplifier speaker outputs will accept 16 AWG - 14 AWG wire. For best possible connections, strip 1/2 inch (12 mm) of insulation from the end of each wire and twist the ends. Back out the set screws 3/4 of the way out and **insert the wire firmly and completely, leaving no exposed wire.** Use the supplied hex wrench to tighten the set screws until snug, do not over-tighten.



Ensure each positive and negative wire is inserted into the correct + or - terminals.



Power and Ground Connections

Constant 12 volt (+) Battery Wire

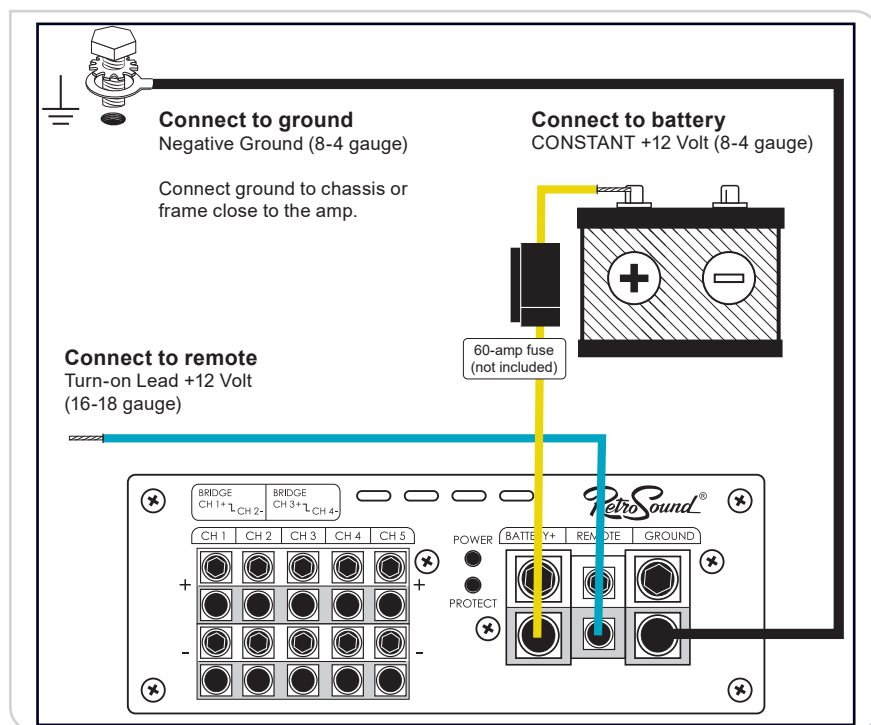
The constant 12 volt (+) battery wire (not included) should be wired directly to the vehicle's positive (+) battery terminal using 8 to 4 gauge primary wire depending on run length. Start at the vehicle's battery, and run the cable back to the amplifier. Avoid running the wire over engine components and heater cores. The use of an in-line fuse (not included) is required at the positive (+) battery terminal. Connect the fuse holder as close to the battery as possible (within 6-8 inches of the positive (+) battery terminal). This fuse should be 60 amps. Leave the fuse out until the final connections have been made.

Ground (-) Black Wire

Locate a metal area as close to the amplifier as possible (preferably the floor pan or vehicle chassis). The ground wire should be made using the same gauge wire as the power connection and be a short as possible. Use a wire brush or sandpaper to eliminate any paint for a better ground connection. Secure the ground wire to the vehicle using a bolt, star washer and nut (not included). See the diagram at the bottom of page 7 for a close-up of a correct ground connection.

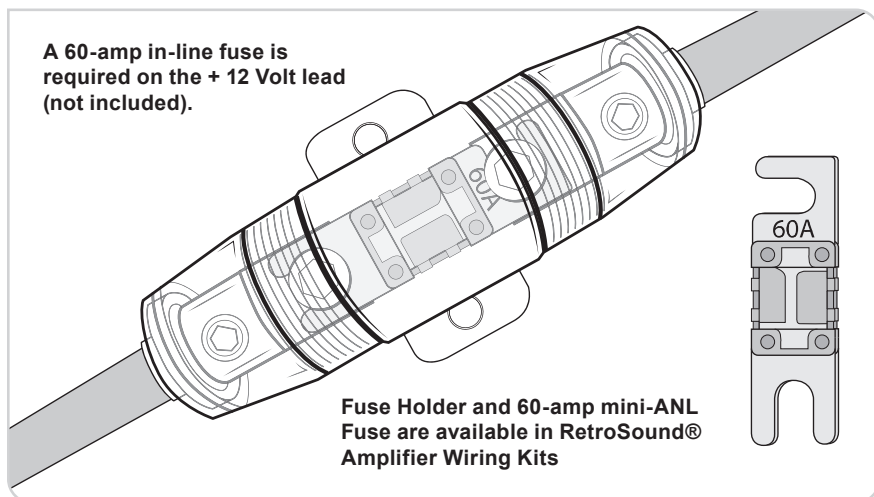
Remote Wire

Connect the remote wire to your radios remote turn-on lead.

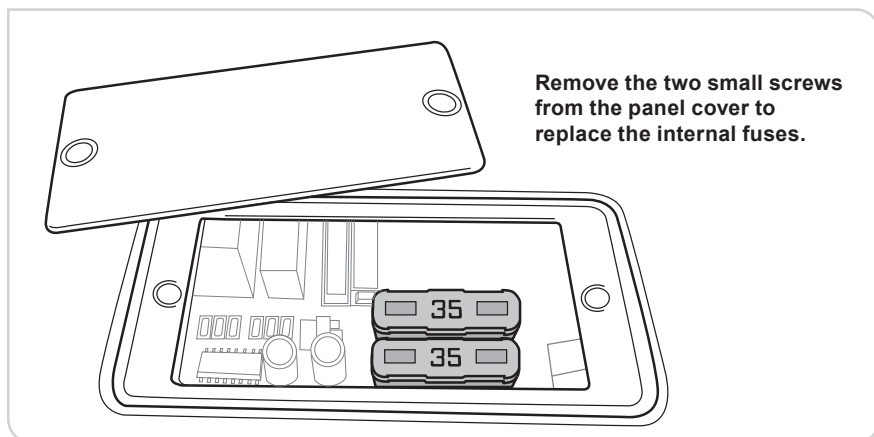


Fuses

Installing a 60-amp in-line fuse near the battery on the + 12 Volt lead is required to protect your vehicles wiring and the amplifier. A high-quality barrel fuse holder and 60-amp mini-ANL fuse are available in RetroSound® Amplifier Wiring kits.



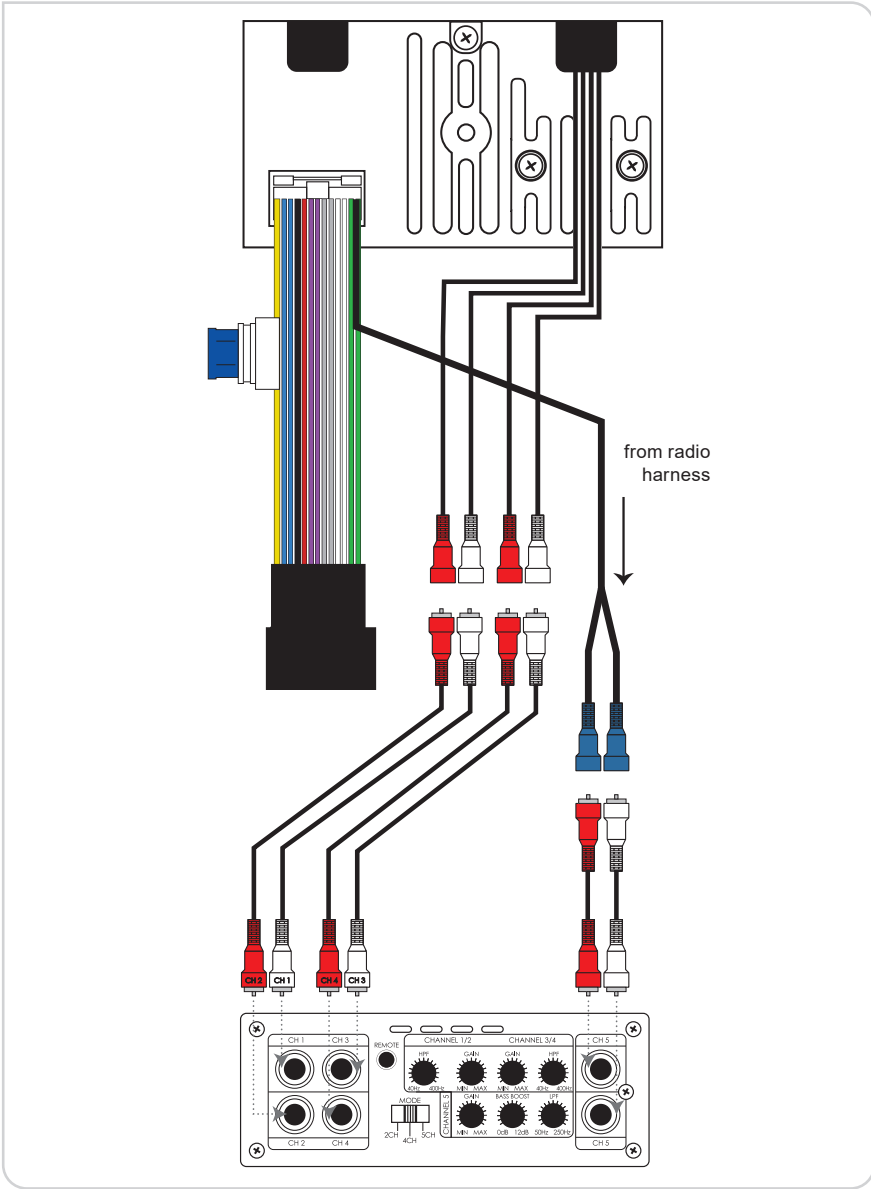
Always check the external fuse for failure first, then the internal fuses on the bottom of the amplifier. The internal fuses will only blow if the external fuse fails .



The fuses included with the Technophonic amplifier are to replace the internal fuses and only protect the amplifier itself in case of short-circuit. To replace the internal fuses, remove the panel on the bottom of the amplifier and replace the blown fuses as needed. Use only 35-amp fuses.

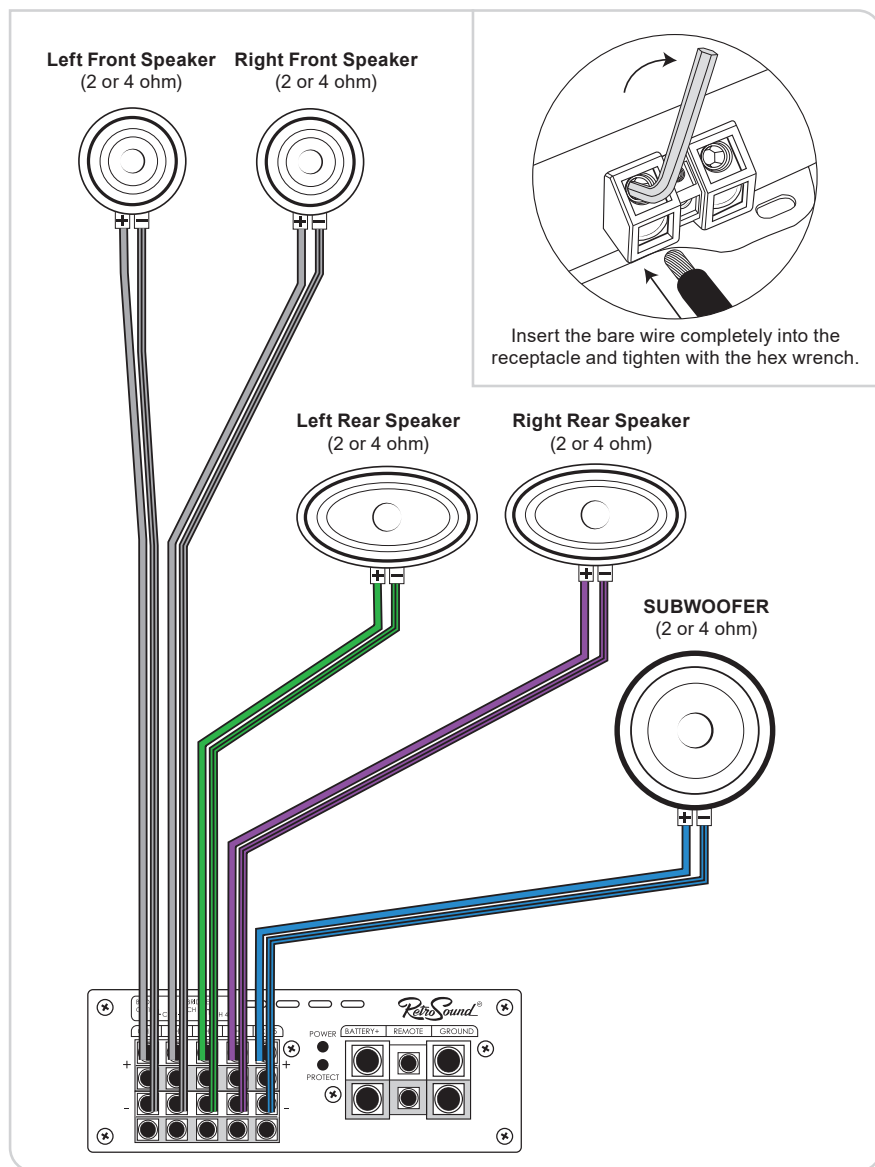
Wiring: RCA Connections | 5 Channel

Connect the Technophonic amplifier directly to your RetroSound® radio using the RCA outputs. The front RCA outputs connect to channels 1 and 2 on the amplifier. The rear RCA outputs connect to channels 3 and 4. The RCA outputs for the subwoofer connect to both inputs on channel 5 of the Technophonic amplifier. For radios with only 2 or 4 outputs use the mode select switch (see page 15).



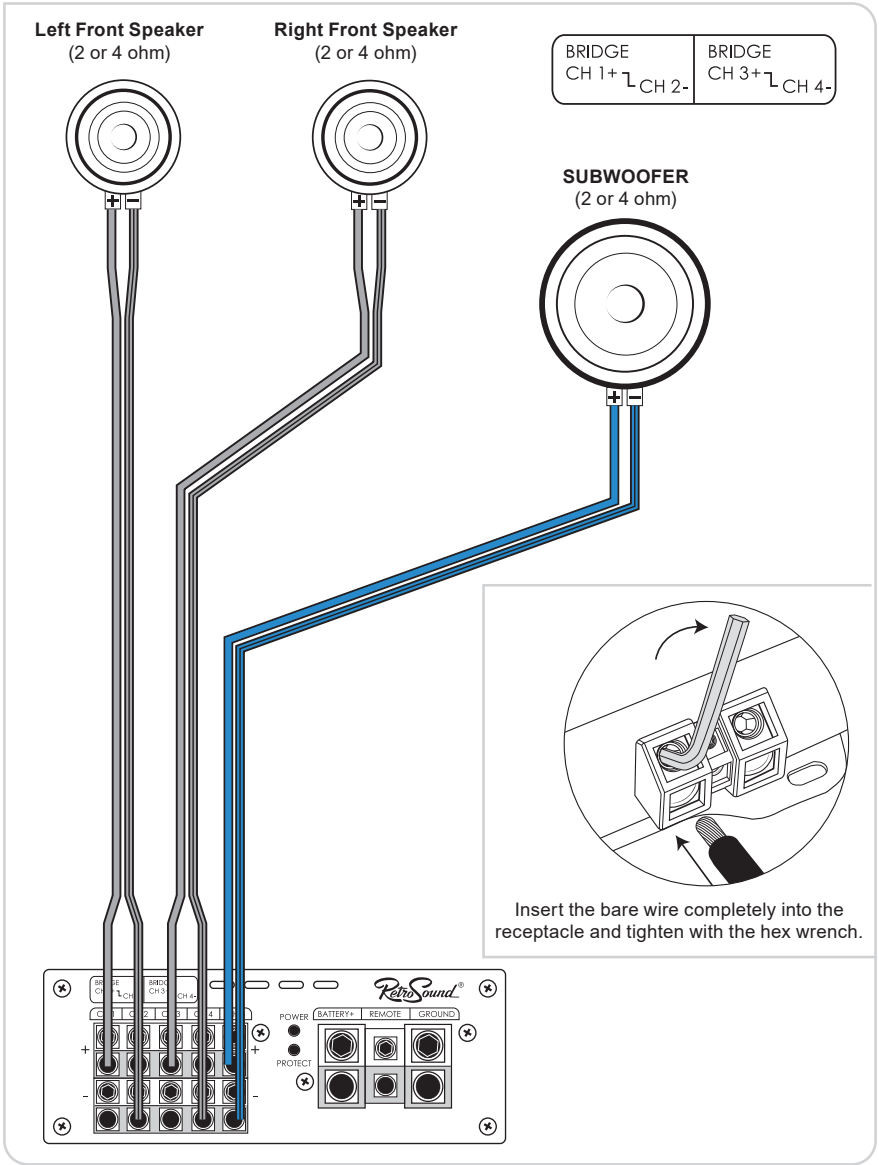
Wiring: Speaker Connections | 5 Channel

For five speaker systems, connect the speakers to channels 1-5. Strip 1/2 inch (12 mm) of insulation from the end of each wire and twist the ends. Back out the set screws 3/4 of the way out and insert each wire firmly and completely, leaving no exposed wire. Ensure each wire is inserted into the proper positive or negative terminals. Use the supplied hex wrench to tighten the set screws until snug, do not over-tighten.



Wiring: Speaker Connections | Bridged

The Technophonic amplifier is bridgeable. The diagram above the channel labels on the rear of the amplifier illustrates the bridged connection paths. Bridge CH1 with CH2, and CH3 with CH4. Connect the first bridged speaker to the positive terminal on channel 1 and negative terminal on channel 2. Connect the second bridged speaker to the positive terminal on channel 3 and the negative terminal on channel 4. The subwoofer connects to channel both 5 inputs. The Technophonic amplifier is 2 ohm and 4 ohm stable.



Controls

A. High Pass Filter (HPF)

The HPF (adjustable between 40Hz and 400Hz) filters out high frequencies below the designated setting on the amplifier while attenuating frequencies above that setting.

B. Low Pass Filter (LPF)

The LPF (adjustable between 50Hz and 250Hz) filters out low frequencies above the designated setting on the amplifier while attenuating frequencies below that setting.

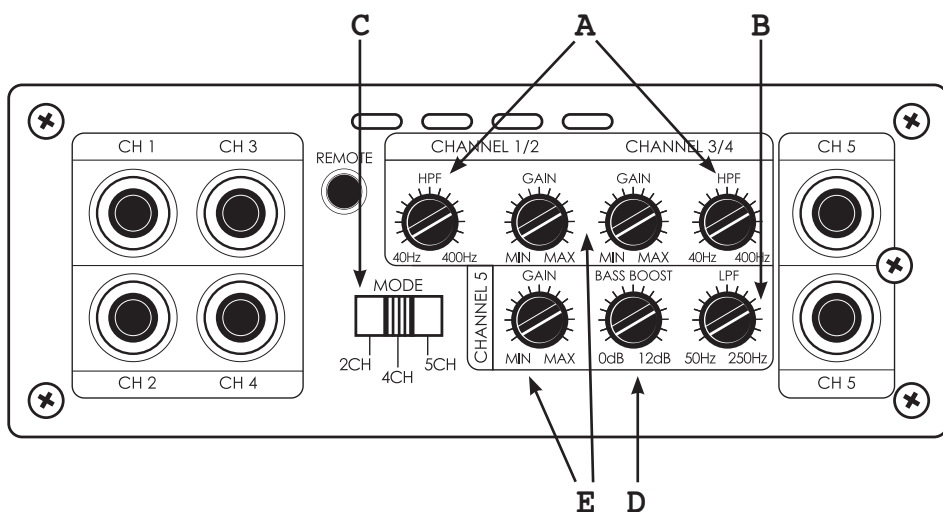
C. Mode

The Mode Select Switch toggles the input mode of the amplifier between 2-channel, 4 channel, and 5-channel operation (see page 15).

- When set to 2CH, only input channels 1 and 2 will be active
 - Channels 3 and 4 will be created internally for output.
- When set to 4CH, only input channels 1 - 4 will be active
 - Channel 5 will be created internally for output.
- When set to 5CH, all input channels active.

D. Bass Boost

The Bass Boost increases the decibel level of the bass at 50Hz. The Bass Boost control adjusts between 0dB (no boost) and 12dB (maximum boost).



Controls

E. Gain Controls

This control is used to match the input sensitivity of the amplifier to the radio. The Gain Control is not a volume control. Use the source unit (radio) to control system volume. Use these steps to properly set all three gains:

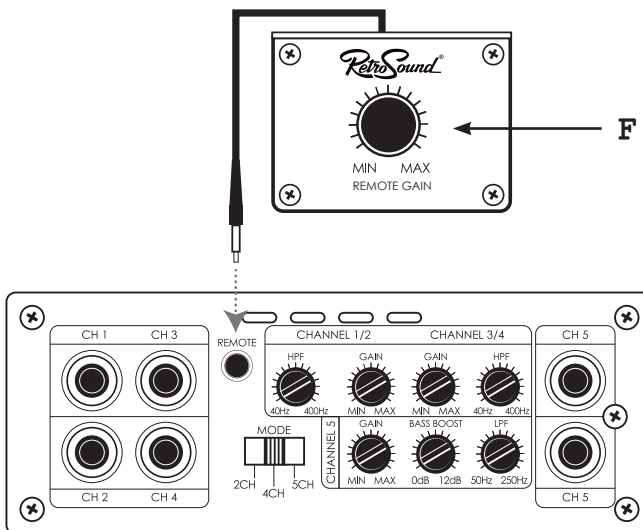
1. Set the Gain Control to minimum by turning the control knobs completely counter clockwise.
2. On the Radio, set the bass and treble to zero, and adjust the volume to approximately 2/3 of maximum.
3. Slowly increase the amplifier's gain by turning the knob clockwise until the sound has just begun to distort. Then turn the knob counter clockwise until the distortion goes away. This will allow the amplifier to operate at maximum efficiency.

Failure to follow these steps could result in damaged speakers and/or amplifier.

F. Remote

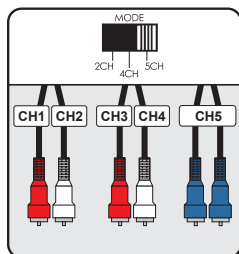
The Remote input is where the Remote Gain Control connects to the amplifier. The Remote Gain Control can be mounted to a convenient location and allows the user to reduce the gain on channel 5. This is particularly useful when listening to poorly recorded music or live recordings where the bass frequencies may be louder than normal.

Adjusting this control will adjust between the minimum level of gain up to the point where the amplifier is currently set. When set to MAX, the gain will be equal to the setting on the amplifier.



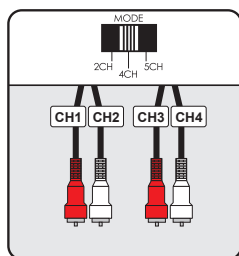
Mode Select Switch

The Technophonic amp can be set to two, four or five channel mode to match the number of outputs the connected radio has. When set to two or four channel modes the amplifier will create the additional outputs internally so all five outputs can be used.



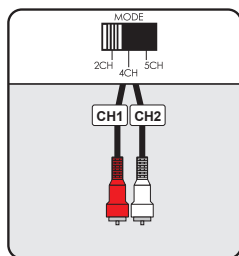
5-Channel Operation

If using five channels of input place the mode switch in 5CH position. 5-Channel mode allows for full balance and fader control on all four full -range speaker outputs and any control the radio offers via the subwoofer outputs.



4-Channel Operation

If your radio only has four low level RCA outputs, place the mode switch in 4CH position. The Amp will create the 5th subwoofer output channel internally. 4-Channel mode allows for control of the sub channel via the remote gain control.



2-Channel Operation

If only using two channel inputs or if the radio only has two outputs place the mode switch in 2CH position. The Amp will create the 3rd, 4th, and 5th channels internally. 2-Channel mode only allows for control of the right and left balance on two and four channel sets with no fading between. The 5th channel can be controlled via the remote gain control.

When using the amp in any of the mode selections, adjust gains and filter points as needed.

Troubleshooting

Problem	Solution
Green Power LED does not turn on	<ul style="list-style-type: none">• Check to ensure that the Battery (+)(12 volt constant) wire has 12 to 14.4 volts.• Check to ensure that the amplifier turn-on lead has 12 volts.• Check the fuses at bottom of the amplifier. (35-amp ATC style)
Red Protect LED illuminates	<ul style="list-style-type: none">• Advanced protection circuitry is engaged due to high internal temperature of the amplifier. The amplifier needs more clearance around the chassis. If this continues, choose a better ventilated mounting location.• High operating temperature can also be caused by an incorrect input sensitivity level. Reset the Gain Control.
The amplifier becomes very hot and shuts down or plays at a very low volume	<ul style="list-style-type: none">• Thermal protection is engaged. Check for proper impedance at speaker terminals and air flow around the amplifier.• Voltage protection is engaged. Voltage to the amplifier is not within the 12 to 14.4 volt operating range. Inspect the charging system.• Short-circuit protection is engaged. Check for speaker wires shorted to each other or the vehicle chassis.
Alternator noise that varies with RPM	<ul style="list-style-type: none">• Check for damaged RCA cables.• Check the radio and amplifier ground.• Turn down the amplifier Gain setting.
Poor bass response	<ul style="list-style-type: none">• Speakers are out of phase. Ensure that positive and negative speaker terminals are wired correctly.

Specifications

Amplifier

Full-Range Output Power	65 Watts x 4 channels RMS @ 4 ohms
Subwoofer Power Output.....	225 Watts x 1 channel @ 4 ohms
Full-Range Output Power	95 Watts x 4 channels RMS @ 2 ohms
Subwoofer Power Output.....	330 Watts x 1 channel @ 2 ohms
Signal to Noise Ratio	>95dB
Input Sensitivity	200 mV-6.0 volts
Full-Range Frequency Response.....	24Hz-65KHz
Subwoofer Frequency Response	24Hz-250Hz
Total Harmonic Distortion.....	<0.2% @ 65 watts x 4 RMS
Bass Boost.....	0-12dB @ 50Hz

Filters

Low Pass Filter Frequency Range	50Hz - 250Hz
High Pass Filter Frequency Range.....	40Hz - 400Hz
Filter Slope	24dB

Other Specifications

Fuses* (Internal).....	35-amp ATC Style (x2)
Size (W x H x L)	12.9 in x 5.3 in x 1.87 in (33 cm x 13.4 cm x 4.75 cm)

*An additional 60-amp fuse (not included) must be used on the Battery (+) wire at the battery. The fuse must be placed as close as possible to the positive (+) battery terminal (within 6-8 inches away).

NOTE: All specifications are subject to change without notice.

Warranty

Your unit comes with a manufacturer's warranty covering any defects in materials and workmanship. Retro Manufacturing, LLC (collectively referred to as "the warranter"), at its option, will either (a) repair your unit with new or refurbished parts or (b) replace it with a new or refurbished unit. The warranty period starts from the original purchase date and is valid for the length of time indicated in the chart below. The decision to repair or replace will be made by the warranter.

ITEM	WARRANTY
Technophonic	One (1) Year

During the "Parts" warranty period, there will be no charge for parts. You must mail in your unit during the warranty period at your expense. This warranty only applies to products purchased directly from Retro Manufacturing or an authorized dealer. This warranty is extended only to the original purchaser of a new product that was not sold "as is." A purchase receipt or other proof of the original purchase date is required for warranty service.

To handle a warranty issue go to www.retromanufacturing.com/returns-center and fill out the Returns Form to receive a Return Authorization (RA) number. A RA number must accompany all returns and warranty issues. Any product received without a RA number will be refused.

LIMITED WARRANTY-LIMITS AND EXCLUSIONS

This warranty ONLY COVERS failures due to defects in materials and workmanship and DOES NOT COVER normal wear and tear or cosmetic damage. The warranty ALSO DOES NOT COVER damages that occurred during shipment, failures which are caused by products not supplied by the warranter, failures that result from accident, misuse, abuse, neglect, bug infestation, mishandling, misapplication, alteration, faulty installation, set-up adjustment, maladjustment of consumer control, improper maintenance, improper antenna, inadequate signal reception or pickup, power line surge, improper voltage supply, lightning, modification, commercial use (such as use in hotels, offices, restaurants, or other business uses) or rental use of the product, or service by anyone other than Retro Manufacturing, LLC, or damage that is attributable to acts of God.

THERE ARE NO EXPRESS WARRANTIES EXCEPT AS LISTED UNDER LIMITED WARRANTY. THE WARRANTER IS NOT LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THIS UNIT OR ARISING OUT OF ANY BREACH OF THIS WARRANTY. (As examples, this excludes damages for lost time, the cost of having someone remove or re-install an installed unit if applicable, travel to and from the servicer, and loss of media, data, or other memory contents. The items listed are not exclusive but are for illustration only.) ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING THE WARRANTY OF MERCHANTABILITY, ARE LIMITED TO THE PERIOD OF THE LIMITED WARRANTY.

Some states do not allow the exclusion or limitation of incidental or consequential damages or limitations on how long an implied warranty lasts, so the exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. If a problem with this unit develops during or after the warranty period, you may contact your dealer or Retro Manufacturing, LLC.



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