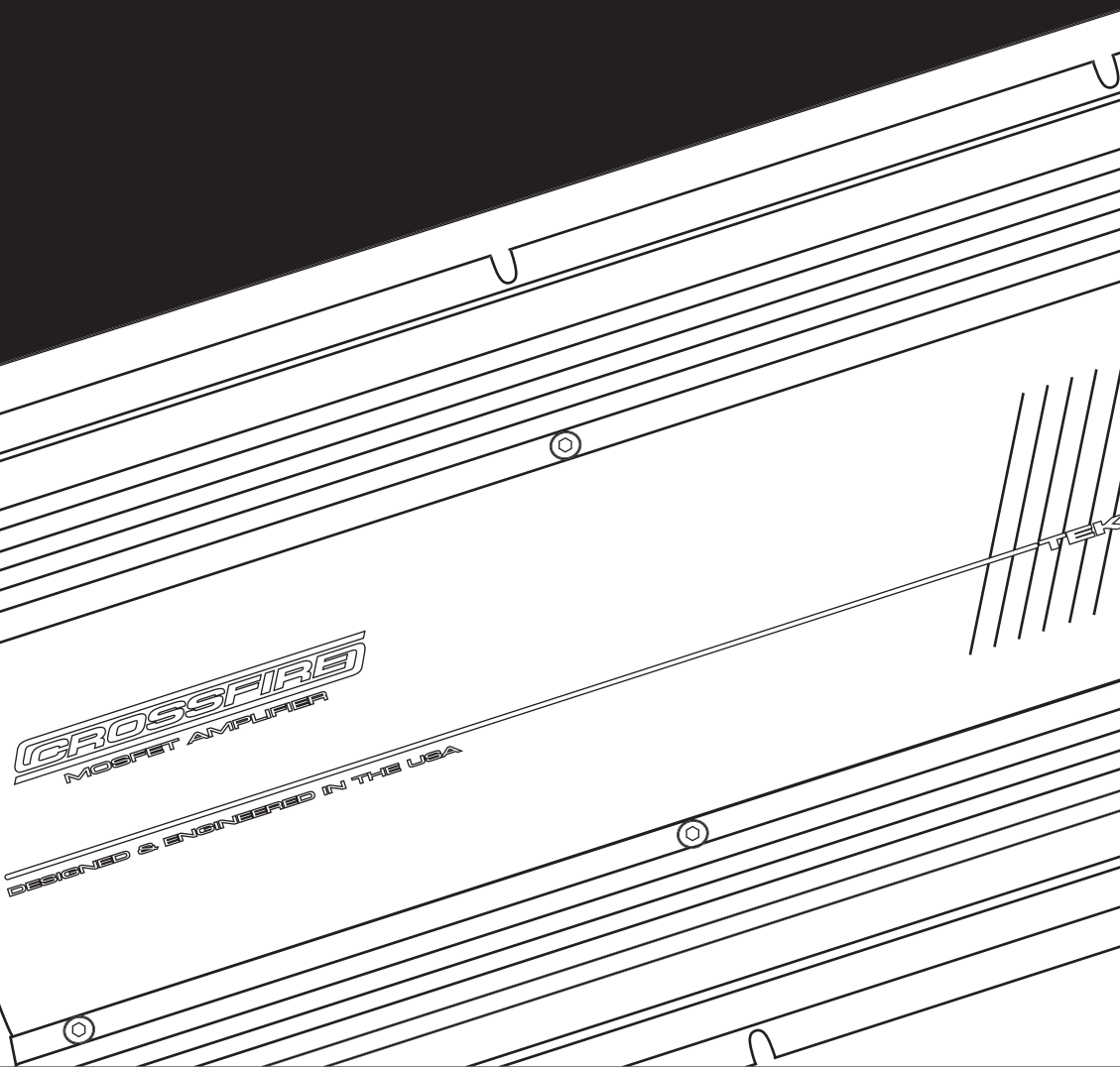


CROSSFIRE

TEK Amplifier

Installation Manual



CROSSFIRE
MOSFET AMPLIFIER

DESIGNED & ENGINEERED IN THE USA

Models: TEK35.2, TEK50.2, TEK75.2, TEK100.2, TEK150.2, TEK35.4, TEK50.4, TEK400.1



Thank you and congratulations for choosing **Crossfire Car Audio** for your amplification needs. **Crossfire** amplifiers have been significantly improved throughout the years to assure quality and reliability. Our goal is to incorporate the latest technology into every **Crossfire** product, providing you with incredible power and the unparalleled sound quality. **Crossfire** uses only the highest quality parts and the precision assembly procedures in all of our amplifiers. This is why we are confident your new **Crossfire** amplifier will provide you with a sound value for years to come.

Features

- Class AB Circuitry
- Fully 2 Ohm Stable Stereo Operation
- Military Spec. Audiophile Grade Components
- High Efficiency MOSFET Power Supplies
 - Multi-stranded power torroid
 - IRFZ44 MOSFET Transistors
- Efficient Bipolar Output Transistors
- Oversized Capacitor Bank
- Wire Free PC Board Layouts
- Gold Plated Input and Output Connectors
- Variable Highpass and Lowpass Electronic Crossovers
- Simultaneous Mono/Stereo Operation Capability
- Internally Bridgeable
- 5 Way Protection Circuitry
- Soft Start, On/Off Circuitry
- High Level Inputs
- Two Year Limited Warranty

Specifications

MODEL:	TEK352	TEK502	TEK752	TEK1002	TEK1502	TEK354	TEK504	TEK4001
RMS Power/4 ohms	35W x 2	50W x 2	75W x 2	100W x 2	150W x 2	35W x 4	50W x 4	200 x 1
Bridge Power, Max.	140w x 1	200W x 1	300W x 1	400W x 1	600W x 1	150W x 2	200W x 2	400 x 1
T.H.D.	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%
Bandwidth + 3dB	5Hz-38KHz	5Hz-38KHz	5Hz-38KHz	5Hz-38KHz	5Hz-38KHz	5Hz-38KHz	5Hz-38KHz	5Hz-38KHz
Signal To Noise	>93dB	>95dB	>97dB	>97dB	>100dB	>95dB	>95dB	>94dB
Damping Factor	>150	>200	>200	>200	>300	>150	>150	>310
Separation	60dB	60dB	62dB	62dB	68dB	61dB	61dB	NA
Input Sensitivity	180mV-4V	180mV-4V	180mV-4V	180mV-4V	180mV-5V	180mV-4V	180mV-4V	265mV-5V
Input Impedance	20Kohm	20Kohm	20Kohm	20Kohm	20Kohm	20Kohm	20Kohm	20Kohm
Power Fuse	15 Amp	20 Amp	25 Amp	(2)25 Amp	(2)30 Amp	25 Amp	(2)20 Amp	(2)25 Amp
Dimensions W:	9.3 IN	9.3 IN	9.3 IN	9.3 IN	9.3 IN	9.3 IN	9.3 IN	9.3 IN
H:	2.1 IN	2.1 IN	2.1 IN	2.1 IN	2.1 IN	2.1 IN	2.1 IN	2.1 IN
L:	8.35 IN	10.32 IN	11.5 IN	13 IN	15 IN	11.5 IN	11.5 IN	11.5 IN
CROSSOVER								
Variable Low Pass	50-150Hz	50-150Hz	50-150Hz	50-150Hz	50-150Hz	50-150Hz	50-150Hz	50-150Hz
Variable High Pass	50-150Hz	50-150Hz	50-150Hz	50-150Hz	50-150Hz	50-150Hz	50-150Hz	50-150Hz
X-Over Slope	12dB	12dB	12dB	12dB	12dB	12dB	12dB	12dB
45hz BOOST	Yes	Yes	Yes	Yes	Yes	No	No	No

All specifications are with 12.5 volts DC. Typical output with 14.4 volts DC is 20% higher.

IMPORTANT

Please read all instructions before installation!

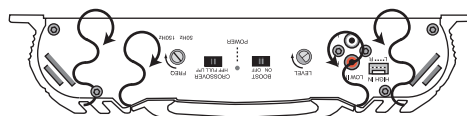
The quality of installation may affect the performance and reliability of your Crossfire product. If you have any doubts or questions regarding installation, you may wish to contact your authorized Crossfire dealer. Remember to follow all wire and fuse requirements suggested in this manual. Warranty may void if proper installation technique is not used (refer to warranty section in the rear of this manual).

Mounting

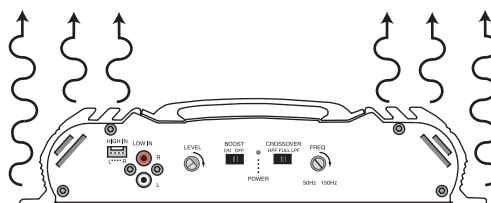
Appropriate mounting is very important for prolonged life expectancy of any amplifier. Select a location of applicable space that allows sufficient airflow and provides protection from moisture. Keep in mind that an amplifier should never be mounted upside down. Upside down mounting will compromise heat dissipation through the heatsink and will engage the thermal protection circuit much sooner. Excessive heat can shorten your amplifier's life. To maximize heat dissipation, be sure to leave at least 2.5 inches of clearance around the amplifier. Fans should be used in correspondence with an escape duct for heat when mounting the amplifier in an enclosed or restricted area.

Avoid slipping and scratching your new Crossfire amplifier by pre-drilling the mounting holes with either an 1/8" or 3mm diameter drill bit when using the screws supplied in the accessory kit. Always investigate the mounting area thoroughly for electrical wires, vacuum lines, and brake or fuel lines before you start to prevent any potentially expensive mistakes.

X Incorrect Mounting
Heat is trapped inside the amplifier, shortening the life of the electronic components.



O Correct Mounting
Heat is lifted from the amplifier heatsink.



Power Connections

All Crossfire amplifiers are designed to work within 10.5 to 16 volts DC. Therefore, as a precaution, the vehicle's electrical system should be checked for correct voltage supply with the help of a voltmeter. First, connect the test leads of the voltmeter to the battery terminals with the ignition of the vehicle in the off position. The voltmeter should read no less than 12 volts. Next, check voltage of the battery with the engine running between 1500 and 2000 rpms. The voltmeter should now read between 13.5 and 14.5 volts. If your vehicle's electrical is not up to these specifications, we recommend having it checked by an automotive mechanic before you further the installation.

POWER WIRE & FUSE

The proper wire size is very important for an amplifier capable of these power levels. The following are the minimum recommended fuse values and wire gauge for lengths up to 20ft.

Model	Wire	Fuse
TEK352	10awg.	15amp
TEK502	10awg.	20amp
TEK752	10awg.	30amp
TEK1002	8awg.	50amp
TEK1502	8awg.	60amp
TEK354	10awg.	25amp
TEK504	10awg.	40amp
TEK4001	8awg.	50amp

POWER

Power wire needs be connected directly to the battery using the wire requirements listed above. Never use the fuse box or any other wire as a source for the power for an amplifier. Before you start, choose the easiest path to run the wire from the battery to the amplifier. Generally, try to keep the power wire on the driver's side of the vehicle (See Signal Inputs & Outputs for explanation). Follow the rules below for running the power cable through the vehicle:

1. Use grommets when passing the power wire through any metal wall of the vehicle.
2. Avoid sharp corners or sharp body parts that may easily cut through the insulation on the wire.

3. Avoid running the power wire over engine components and near heater cores.
4. Avoid the gas, brake and clutch pedals and their mechanisms.
5. Use an inline fuse at the battery to eliminate the risk of a fire caused by a short in your power wire.
6. Connect the fuse holder as close to the battery positive terminal as possible.

Once the wire has been run, connect the wire to the battery terminal. As a precaution, leave the fuse out until all other wire connections are made.

GROUND

The wire used for ground should be of the same gauge as the power wire. Just make sure that you choose a different color (generally black) so that you don't reverse the polarity at the amplifier terminals. Follow the rules below for connecting the ground wire properly:

1. Avoid using seat bolts, seatbelt bolts, and fender wells for ground.
2. Choose a metal area close to the amplifier that appears to be a good source of ground, such as the floor.
3. Investigate the area you wish to use for electrical wires, vacuum lines, and brake or fuel lines.

Directions for connecting the ground wire to the vehicle:

1. Find a nut and bolt to fit the ring terminal you have chosen.
2. Drill a hole just large enough for the bolt to fit through at the source of ground.
3. Use either a wire brush or sandpaper to eliminate unwanted paint around the hole you have drilled as to supply a better contact for your ground.
4. Terminate the ground wire to the ring terminal and attach it to the bare metal using the nut and bolt. It is very important for this connection to be solid.
5. Spread silicon over the screw and bare metal to prevent rust and possible water leaks.

REMOTE TURN-ON

In between the power and ground of the amplifier is a remote turn-on terminal. This terminal must be connected to a switched +12 volt source to make the amplifier operational. Typically, remote turn-on leads are provided at the head unit that will turn on and off the amplifier in correspondence with the source. This means you will most likely have to remove the head unit from the dash to find the source +12V output wire.

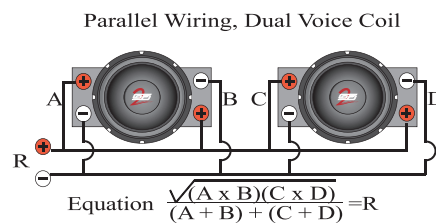
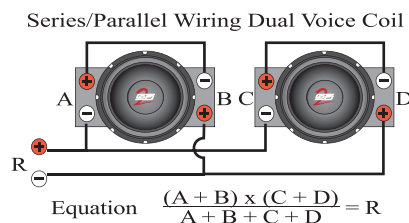
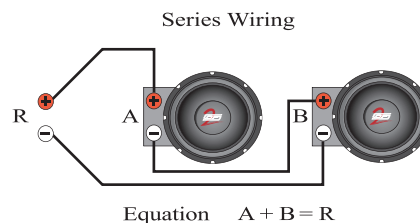
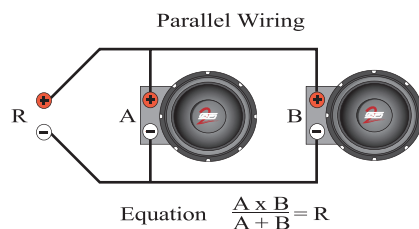
Once the head unit is pulled from the dash, find the remote turn-on located in the wiring harness of the head unit. The majority of vehicles will be using an after market head unit when using an amplifier. These after market head units generally use a blue or a blue with white wire as the remote turn on for the amplifiers. However, when using a factory radio, the power antenna wire should be as a turn on lead if applicable (colors will vary from make/model). Only if a lead is not available at the source, a switched +12 volt supply, such as a toggle switch, should be applied.

Use a minimum of 18-gauge wire, preferably blue, to connect the amplifier to the head unit. If possible, route this wire along side of the power wire using the same precautions. Connect the remote output of the head unit to the wire using a barrel connector or a mating terminal as required by the source unit. You can solder these wires together, but be sure to use heat-shrink over the connection. Do not place the radio back into the dash yet.

Speaker Output

LOAD

All TEK amplifiers reach their potential output into a 2 ohm stereo or 4 ohm mono load. Any lower impedance can send the amplifier into current protection and possibly damage the circuitry. To prevent damage, use the following formulas to help you figure out the load you are placing on your amplifier. If you have any difficulties, please contact your local Crossfire dealer or Crossfire's Technical assistance at 562-906-0800.



WIRING

Always choose speaker wire wisely. Make sure that the wire is appropriate for the speaker you are applying it to. It is highly recommended not to use anything smaller than 16awg. Consult your dealer.

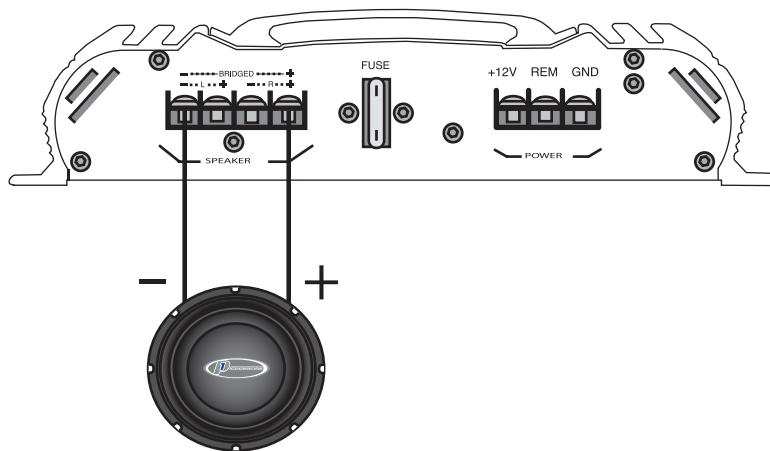
As with the power wires, use caution around sharp corners or body parts that may easily cut through the insulation on the wire. If running into the doors, it is important to use a protective boot in the door jam to protect the wire from being pinched as well as keeping water or moisture from entering the vehicle. Use the factory boots whenever possible. And always make sure the wire is out of the way of the window track.

To connect the wire to the speaker, strip off approximately 1/2" inch (12mm) of the insulation and terminate the wires using insulated speaker terminals (not supplied) or by soldering the connection to the loudspeaker. Be sure that the polarity at the loudspeaker is correct.

WIRE DIAGRAMS

Single Channel Operation (bridged)

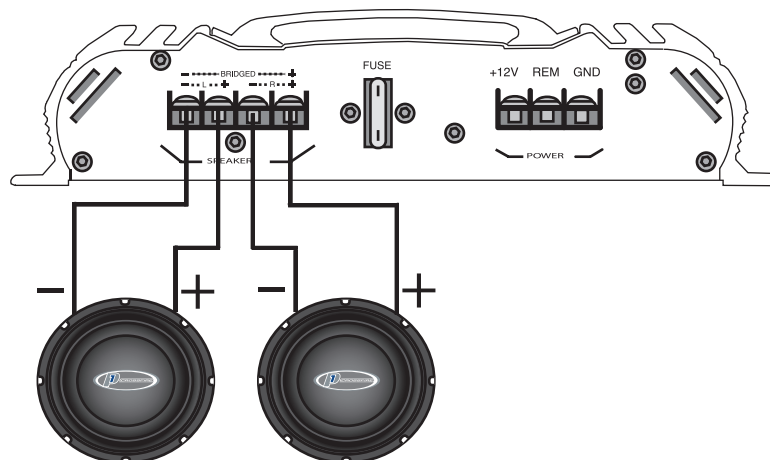
MODELS
TEK352
TEK502
TEK752
TEK1002
TEK1502



Two Channel Operation (stereo)



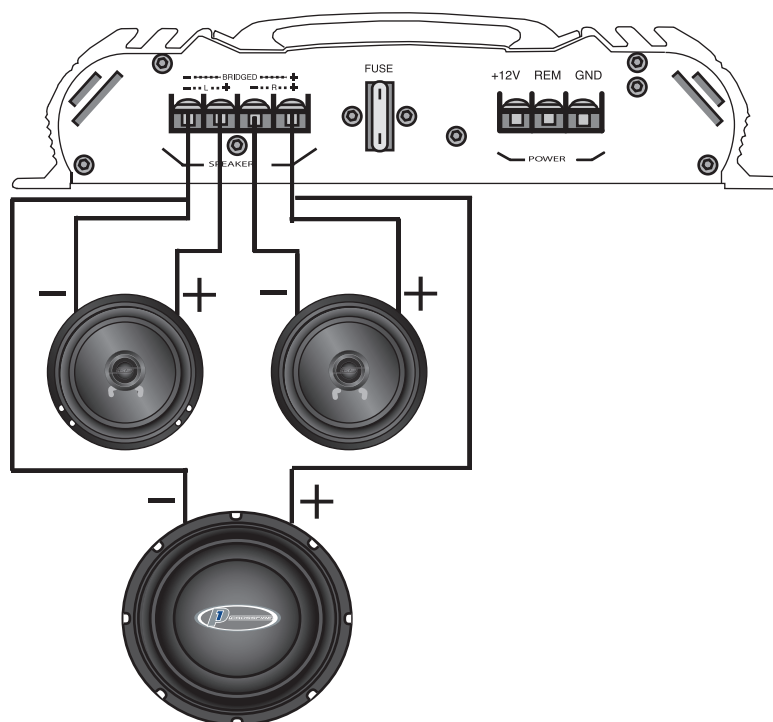
MODELS
TEK352
TEK502
TEK752
TEK1002
TEK1502



Three Channel Operation (stereo/mono)



MODELS
TEK352
TEK502
TEK752
TEK1002
TEK1502



Four Channel Operation (stereo) ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●

MODELS
EK354
EK504

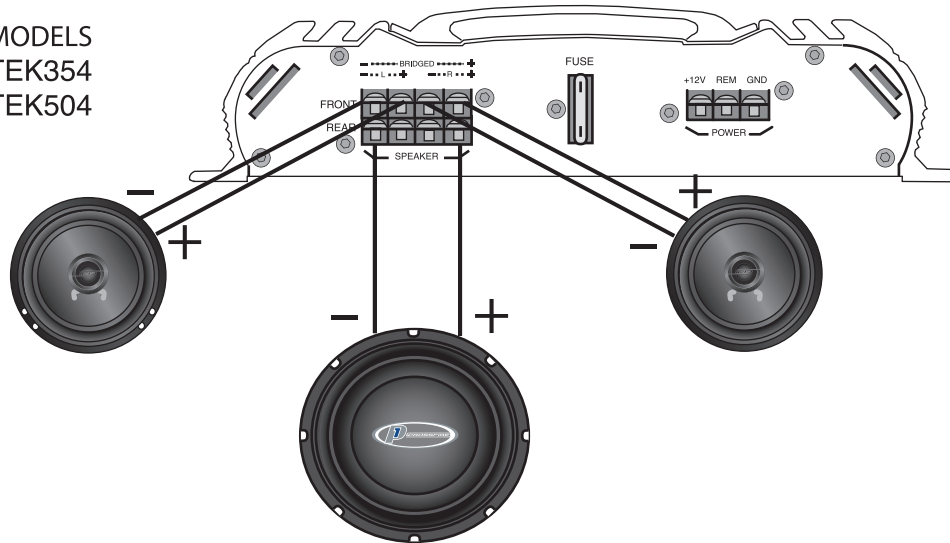
Diagram illustrating the wiring connections for the EK354 and EK504 models. The diagram shows a car stereo unit with four speakers (two front and two rear) and a power source.

The power source is connected to the stereo unit via a fuse. The power source is labeled +12V, REM, and GND. The power source is also labeled POWER.

The stereo unit has four speaker terminals labeled FRONT, REAR, and two unlabeled terminals. The wiring connections are as follows:

- The top-left speaker is connected to the FRONT terminal (+) and the unlabeled terminal (-).
- The top-right speaker is connected to the REAR terminal (+) and the unlabeled terminal (-).
- The bottom-left speaker is connected to the FRONT terminal (+) and the unlabeled terminal (-).
- The bottom-right speaker is connected to the REAR terminal (+) and the unlabeled terminal (-).

MODELS
TEK354
TEK504



Connecting the Wires

At this point, the power, ground, and remote wires should be run to the general location of where the amplifier is to be mounted. If the wires are to be hidden under the carpet, you now need to cut a slit for them to come through. To do this, place the amplifier in the location it is to be mounted to verify where the slits need to be. Make sure that there will not be a conflict with the mounting of the amplifier and the wires. Pull the wires through the slit to the terminals leaving approximately 6" (150mm) of slack and cut the wires to an equal length. Locate the spade connectors supplied with the amplifier. Strip approximately 1/2" inch (12mm) of insulation from the end of each wire. Crimp the spade connectors onto the stripped end of the wire. Loosen the terminal screws on the amplifier. Insert the wires into the proper terminals and tighten the screws securely. Check your connections by giving the wires a slight tug.

Signal Inputs and Outputs

Getting a clear signal from the head unit to the amplifier is very important. To achieve this, the proper signal cables (RCA style) must be used. Estimate the length of the cables necessary. Take note that the signal cable manufacturers will probably not have the exact length necessary for your vehicle. If you are in between sizes, purchase the slightly longer cable. You can always hide the extra wire.

Be aware of the differences in cable. Better RCA's usually have multiple layers of shielding and/or twisted pair wiring for better noise rejection. Ask your local dealer for his recommendation.

LINE LEVEL INPUTS

Car environments are notorious for poorly insulated wires. This means that hiss, engine noise, and electrical noise can easily be picked up through RCA cables if ran incorrectly. To avoid inducing noise into the system, run the RCA's away from large wire looms and electric fans if possible. And always make sure to position your signal cables away from the power wire, preferably on the opposite side of the vehicle. As with the power wire, use caution around sharp corners or body parts that may easily cut through the cables.

When connecting the signal cables, check the balance when connecting them to the source unit and the amplifier. The cables should be marked: red is right and black or white is usually left.

Once you have finished connecting the signal cables to the source unit, slide the unit back in to the dash location. Make sure that the unit is in tightly.

HIGH LEVEL INPUTS

Use high level inputs only if your current head unit does not have low level outputs. These inputs may be tapped to the closest left and right speaker wires available. Please see diagram for connections.

LEVEL CONTROL

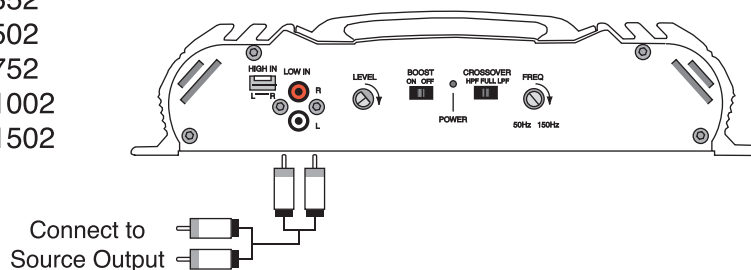
Next to the preamp inputs on the side panel of the amplifier is the level control, commonly referred to as the gain. The gain allows you to match the output level of your source unit or signal processor to the input level of the amplifier. Matching the input can be accomplished in three simple steps:

1. Turn gain (level) control to minimum.
2. Turn on the source unit and adjust to 2/3 of max volume while playing music.
3. Adjust the gain control until desired, maximum volume is achieved without audible distortion

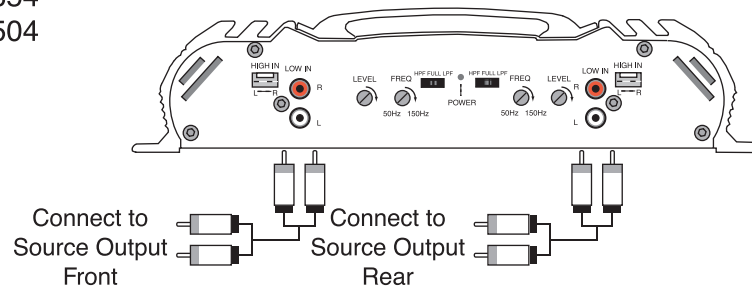
Remember that the gain control is not a volume knob. Ignoring the three steps above may leave you with damaged speakers and possibly a damaged amplifier.

Low Level Inputs ●

MODELS
TEK352
TEK502
TEK752
TEK1002
TEK1502

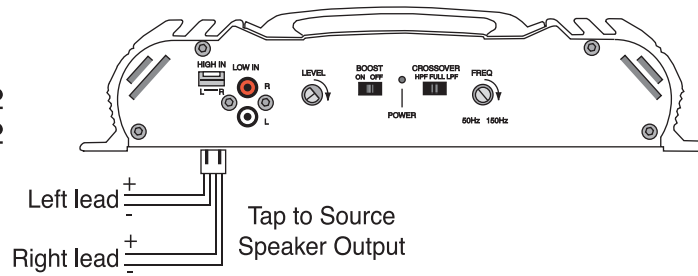


MODELS
TEK354
TEK504

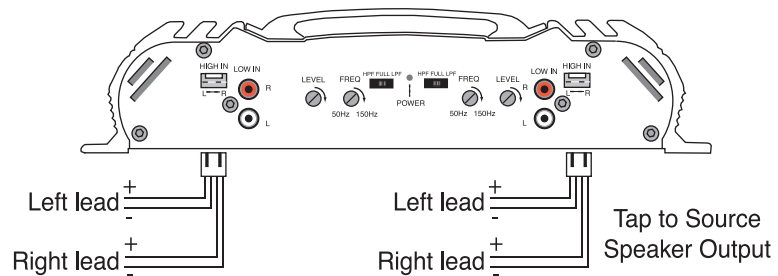


High Level Inputs

MODELS
TEK352
TEK502
TEK752
TEK1002
TEK1502



MODELS
TEK354
TEK504



Power Connections

CROSSOVER

On the side panel of your amplifier is a potentiometer marked 50Hz - 150Hz. This controls the relative crossover point for the amplifier. To apply the crossover feature, locate the switch on the same side panel that reads HPF/Full/LPF. For highpass applications, such as component sets or coaxials, choose HPF. For lowpass applications, such as subwoofers, choose LPF. If you are looking for a full range application, place the switch on FULL. Full will override the crossover completely.

Note: The four channel amplifiers will have two sets of crossover controls, one for the front channels and one for the rear channels.

Listed below are recommended crossover points for various size speakers. These are only guidelines. Actual crossover points recommended by the speaker manufacturers may vary.

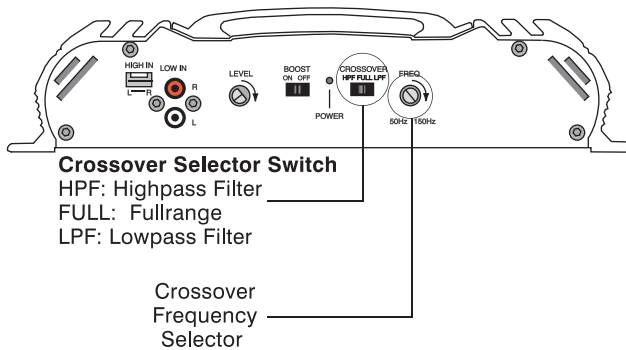
Speaker size	Crossover recommendation
4" (100mm) component/coaxial	HPF 130Hz - 150Hz
5.25" (130mm) component/coaxial	HPF 80Hz - 110Hz
6" (160mm) component/coaxial	HPF 70Hz - 100Hz
8" (200mm) woofer	LPF 90Hz - 120Hz
10" (250mm) subwoofer	LPF 70Hz - 100Hz
12" (300mm) subwoofer	LPF 70Hz - 100Hz
15" (380mm) subwoofer	LPF 50Hz - 80Hz

BOOST

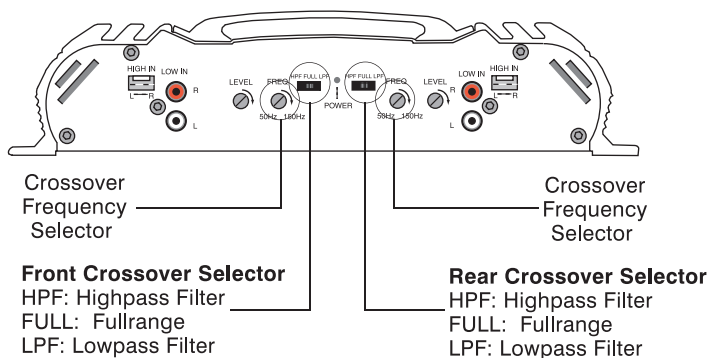
If your system is lacking low bass response, locate the boost switch next to the crossover. By placing this switch in the on position, 6dB of boost centering around 45Hz will be added. In the OFF position no boost is added to the output signal. This boost switch is available on all Crossfire TEK amplifiers with the exception of the TEK354, TEK504, and the TEK4001. Crossfire highly recommends using this feature only on amplifiers powering subwoofers.

Crossover

MODELS
TEK352
TEK502
TEK752
TEK1002
TEK1502

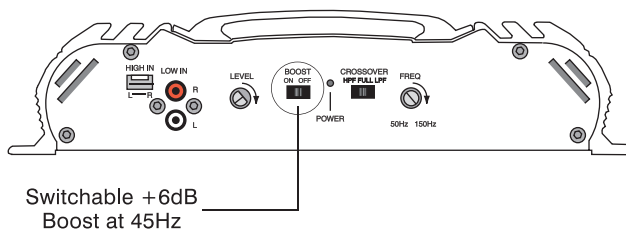


MODELS
TEK354
TEK504



Boost

MODELS
TEK352
TEK502
TEK752
TEK1002
TEK1502



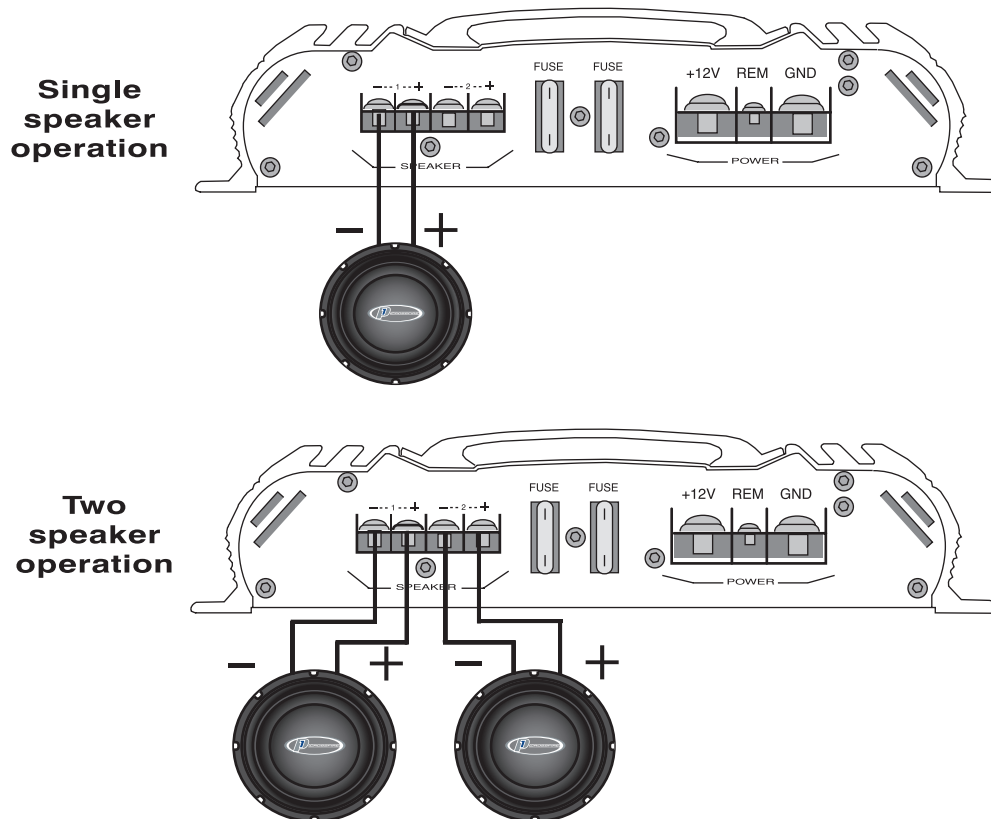
TEK4001 Monoblock

OPERATION

The Crossfire TEK4001 is a mono-block amplifier. Unlike other Crossfire TEK amplifiers, this amplifier operates as a single channel, therefore the amplifier cannot be bridged. Do not be fooled by the two sets of speaker outputs. Two outputs are provided strictly for convenience and are paralleled internally on the circuit board of the amplifier. This means that if both outputs are used with one driver each, the amplifier sees the same load as if the same two drivers are connected to only one output terminal. See diagram below.

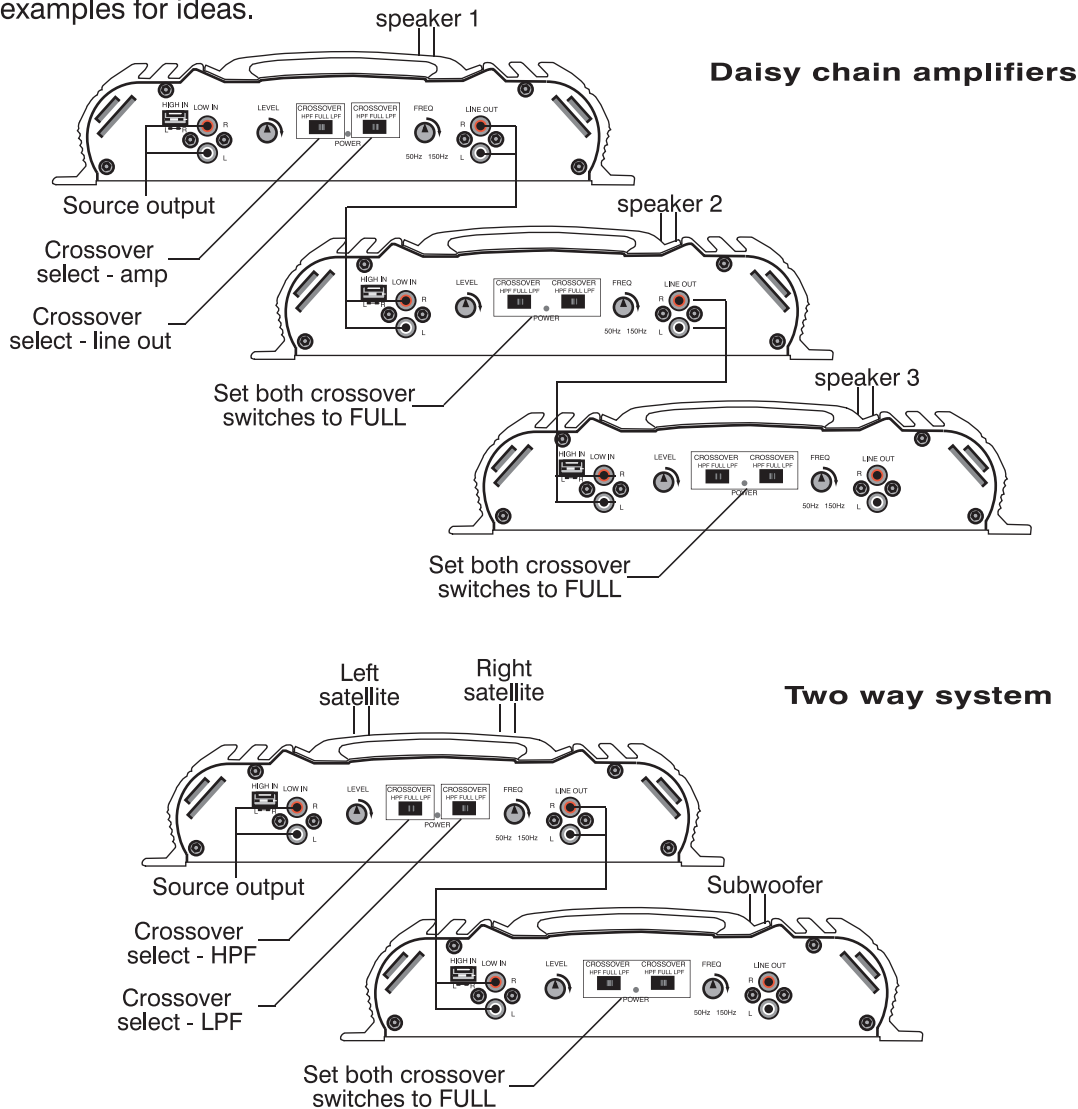
LOAD

The TEK4001 will reach its potential output into a 2ohm load. However, the TEK4001 requires a minimum impedance of 2 ohms to operate trouble free. Any impedance lower than 2 ohms can send the amplifier into current protection and possibly damage the circuitry. Please use the chart on page 8 for formulas to achieve a 2 ohm load.



RCA OUTPUT

Special to the TEK4001 monoblock amplifier is a line level output. This line level output has a built-in crossover and can be used in many ways. Please see the examples for ideas.



Crossfire Limited Warranty

This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state. This warranty is only valid on Crossfire products purchased in the U.S.A. from an authorized Crossfire dealer. All Crossfire amplifiers are warranted to be free from defects in materials and workmanship under normal use and service for a period of (2) years when the unit is installed by an authorized Crossfire dealer. Non-authorized dealer installed products carry a (1) year parts and labor limited warranty. The extent and conditions of Crossfire's limited warranty are as follows:

i. Crossfire will either repair or replace (at its option) any unit which Crossfire has examined and found to be defective and under warranty, to the original purchaser, provided the defect occurs within (2) years of the date of purchase when installed by an authorized Crossfire dealer. This warranty includes both parts and labor and applies to the original purchaser only.

ii. Crossfire will either repair or replace (at its option) any unit which Crossfire has examined and found to be defective and under warranty, to the original purchaser, provided the defect occurs within (1) year of the date of purchase when the unit is installed by a non-authorized Crossfire dealer. This (1) year warranty includes both parts and labor and applies to the original purchaser only.

iii. This warranty will be void on any unit found with the original serial number removed, altered or defaced. All units received by Crossfire for warranty with their original serial numbers removed will not be repaired and returned to sender freight collect.

iv. The provisions of this warranty shall not apply to products used for any industrial, professional or commercial purposes or any other uses for which it was not designed.

v. This warranty does not cover cost for removal of product for repair or reinstallation of product after repair, nor does it cover the cost of returning the product to Crossfire's service center for repair.

vi. This warranty does not apply to repairs or replacements necessitated by any cause beyond the control of Crossfire. Including, but not limited to, any malfunction, defect or failure caused by or resulting from unauthorized service or parts, improper maintenance, operation contrary to furnished instructions, shipping or transit accidents, incorrect power line voltages, fire, flood or any other acts of nature, or normal wear and tear.

vii. The foregoing is in lieu of other expressed warranties and Crossfire does not assume or authorize any party to assume for it any other obligation or liability. The durations of any warranties, which may be implied by law (including the warranties of merchantability and fitness), is limited to the term of this warranty. In no event shall Crossfire be liable for special, incidental or consequential damages arising from obligations under this warranty due to cause beyond its control. Some states do not allow limitations on how long an implied warranty lasts and/or do not allow the exclusions or limitation of consequential damages, so the above limitations and exclusions may not apply to you.

viii. Return policy.

Your unit will be serviced free of charges on an in-warranty basis only. If improper operation occurs, contact your authorized Crossfire dealer for assistance with the return and factory repair of your Crossfire product. If an authorized Crossfire dealer is not available, the following procedure must be followed: phone (562) 906-0800 or fax (562) 941-2284 in your name, address, telephone number and the model number of the item to be returned to receive a return authorization number. Your return authorization number must be clearly written on the outside of the packing box returned to Crossfire. All returned products must be accompanied by a dated purchase invoice or the product may be subject to costs of parts and labor. Return the unit, prepaid postage, in the original protective carton or a carton with ample protection. Please include a brief description of the problem and send your repair to:

CROSSFIRE

12222 Bell Ranch Dr.
Santa Fe Springs, CA 90670



12222 Bell Ranch Dr. Santa Fe Springs, CA 90670 ● Phone (562) 906-0800 Fax (562) 941-2284
www.crossfirecaraudio.com