

# VR AMPLIFIERS

## FEATURES

**VR142 VR202 VR302 VR402 VR602**  
**VR1202 VR354 VR404 VR804 VR401**

Class "AB" Technology  
 Fully 2 Ohm Stable Stereo Operation  
 Military Spec. Audiophile Grade Components  
 High Efficiency MOSFET Power Supplies  
 -Multi-stranded power torroid  
 Efficient Bipolar Output Transistors  
 Oversized Capacitor Bank  
 Wire Free PC Board Layouts

Nickel 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

**VR300D VR600D VR1000D VR2000D**

Class "D" Technology  
 Military Spec Audiophile Grade Components  
 High Efficiency PWM Power Supply  
 -Multi-stranded power torroid  
 -Oversized torroidal core  
 MOSFET Input and Output Transistors  
 Oversized Capacitor Banks  
 Discrete Mount Power and Speaker Terminals  
 Variable Lowpass Electronic Crossover

Variable Subsonic Filter  
 RCA Preamp Output  
 -Variable HP/LP/Full crossover  
 Built in Bridging Module (600D,1000D)  
 -Master / Slave Selector  
 -0/180 Phase Selector  
 5 Way Protection Circuitry  
 Soft Remote On/Off Circuitry  
 Remote Subwoofer Level Control

**For the VR705D amplifier please refer to the Class AB technology for channels 1-4 and Class D technology for the 5th channel.**

## SPECIFICATIONS

| MODEL:            | VR142   | VR202   | VR302   | VR402   | VR602   | VR1202   | VR354   | VR404   | VR804   | VR401   | VR300D  | VR600D  | VR1000D  | VR2000D  | VR705D          |
|-------------------|---------|---------|---------|---------|---------|----------|---------|---------|---------|---------|---------|---------|----------|----------|-----------------|
| POWER/4 ohm       | 35 x 2  | 50 x 2  | 75 x 2  | 100 x 2 | 150 x 2 | 300 x 2  | 35 x 4  | 50 x 4  | 100 x 4 | 200 x 1 | 150 x 1 | 150 x 1 | 250 x 1  | 1000 x 1 | 50 x 4/150 x 1  |
| POWER/2 ohm       | 70 x 2  | 100 x 2 | 150 x 2 | 200 x 2 | 300 x 2 | 600 x 2  | 70 x 4  | 100 x 4 | 200 x 4 | 400 x 1 | 300 x 1 | 300 x 1 | 500 x 1  | 2000 x 1 | 100 x 4/300 x 1 |
| POWER/1 ohm       | N/A     | N/A     | N/A     | N/A     | N/A     | N/A      | N/A     | N/A     | N/A     | N/A     | N/A     | 600 x 1 | 1000 x 1 | N/A      | N/A             |
| BRIDGED/4 ohm     | 140 x 1 | 200 x 2 | 300 x 2 | 400 x 1 | 600 x 1 | 1200 x 1 | 140 x 2 | 200 x 2 | 400 x 2 | N/A     | N/A     | N/A     | N/A      | N/A      | 200 x 2/150 x 1 |
| T.H.D             | 0.02%   | 0.02%   | 0.02%   | 0.02%   | 0.02%   | 0.02%    | 0.02%   | 0.02%   | 0.02%   | 0.02%   | ***     | ***     | ***      | ***      | 0.02%           |
| Bandwidth + 3dB   | 5-38KHz | 5-38KHz | 5-38KHz | 5-38KHz | 5-38KHz | 5-38KHz  | 5-38KHz | 5-38KHz | 5-38KHz | 5-38KHz | 5-250Hz | 5-250Hz | 5-250Hz  | 5-250Hz  | 5-38KHz/5-250Hz |
| Signal To Noise   | >93dB   | >95dB   | >97dB   | >97dB   | >100dB  | >100dB   | >95dB   | >95dB   | >95dB   | >94dB   | >90dB   | >90dB   | >90dB    | >90dB    | >95dB           |
| Damping Factor    | >150    | >200    | >200    | >200    | >300    | >200     | >150    | >150    | >150    | >310    | >200    | >200    | >200     | >200     | >250            |
| Separation        | 60dB    | 60dB    | 62dB    | 62dB    | 68dB    | 68dB     | 61dB    | 61dB    | 61dB    | N/A     | N/A     | N/A     | N/A      | N/A      | 60dB            |
| Input Sensitivity | *       | *       | *       | *       | *       | *        | *       | *       | *       | *       | *       | *       | *        | *        | *               |
| Input Impedance   | 20Kohm  | 20Kohm  | 20Kohm  | 20Kohm  | 20Kohm  | 20Kohm   | 20Kohm  | 20Kohm  | 20Kohm  | 20Kohm  | 20Kohm  | 20Kohm  | 20Kohm   | 20Kohm   | 20Kohm          |
| Power Fuse        | 20 A    | 25 A    | 30 A    | (2)25 A | (2)30 A | N/A      | 25 A    | (2)20 A | N/A     | (2)25 A | N/A     | N/A     | N/A      | N/A      | N/A             |
| 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  | 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  | 2.1 IN  | 2.1 IN  | 2.1 IN  | 2.1 IN  | 2.1 IN   | 2.1 IN   | 2.1 IN          |
| L:                | 8.5 IN  | 10.5 IN | 11.5 IN | 13 IN   | 15 IN   | 22 IN    | 12 IN   | 14 IN   | 17.6 IN | 13 IN   | 9.5 IN  | 11.5 IN | 14 IN    | 22 IN    | 19 IN           |

**CROSSOVER:** Selectable ON/OFF crossover-fully variable 50-150Hz HP (High Pass)/LP (Low Pass) or for those models with "NO" high level inputs is **variable 50-500Hz HP/LP**

| Var. HP/LP       | 50-150Hz        | 50-150Hz        | 50-150Hz        | 50-150Hz        | 50-150Hz        | 50-150Hz        | 50-150Hz        | 50-150Hz        | 50-150Hz        | 50-150Hz        | 50-250Hz | 50-250Hz | 50-250Hz | 50-250Hz | 50-250Hz        |
|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------|----------|----------|----------|-----------------|
| Var. High Pass   | <b>50-500Hz</b> | <b>50-500Hz</b> | <b>50-500Hz</b> | <b>50-500Hz</b> | <b>50-500Hz</b> | <b>50-500Hz</b> | <b>50-500Hz</b> | <b>50-500Hz</b> | <b>50-500Hz</b> | <b>50-500Hz</b> | N/A      | N/A      | N/A      | N/A      | <b>50-250Hz</b> |
| X-Over Slope     | 12dB            | 12dB            | 12dB            | 12dB            | 12dB            | 12dB            | 12dB            | 12dB            | 12dB            | 12dB            | 12dB     | 12dB     | 12dB     | 12dB     | 12dB            |
| 45hz BOOST       | YES             | YES             | YES             | YES             | YES             | NO              | NO              | NO              | NO              | NO              | NO       | NO       | NO       | NO       | NO              |
| Sub-Sonic Filter | NO              | NO              | NO              | NO              | NO              | NO              | NO              | NO              | NO              | NO              | 20-50Hz  | 20-50Hz  | 20-50Hz  | 20-50Hz  | 20-50Hz         |
| High Level Input | YES*            | YES*            | YES*            | NO              | NO              | NO              | YES*            | YES*            | YES*            | YES*            | YES*     | NO       | NO       | NO       | NO              |
| Pass-Thru Output | NO              | NO              | NO              | NO              | NO              | NO              | NO              | NO              | NO              | NO              | YES      | YES      | YES      | YES      | NO              |

**\*\*\* T.H.D. levels vary depending on impedance load. Please see chart below for more information. All specifications are with 12.5 volts DC. Typical output with 14.4 volts DC is approximately 20% higher.**

| T.H.D. LEVEL @ 4 OHM | @.08% | @.08% | @.08% | @.08% |
|----------------------|-------|-------|-------|-------|
| T.H.D. LEVEL @ 2 OHM | @.40% | @.40% | @.40% | @.40% |
| T.H.D. LEVEL @ 1 OHM | N/A   | @1%   | @1%   | N/A   |

**\* In an effort to maintain the best quality and functioning product on the market continuous changes such as the following are made as a "Running Change" improvent. In some model amplifiers the "HIGH LEVEL" input was replaced with an "INPUT SENSITIVITY MULTIPLIER". This two position switch allows the amplifier to make full power at a wider range of voltage input with out the use of a line driver or sacrifice of sound quality. The following chart explains the variations entitled to such changes.**

### INPUT SENSITIVITY MEASUREMENTS

|          | 150mV-3.2V | 150mV-3.2V | 150mV-3.2V | 150mV-3.2V | 150mV-3.2V | 150mV-3.2V | 150mV-3.2V | 150mV-3.2V | 150mV-3.2V | 150mV-3.2V | 150mV-3.2V | 240mV-6V | 240mV-6V | 240mV-6V | 240mV-6V | 150mV-3.2V<br>240mV-6V |
|----------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|----------|----------|----------|----------|------------------------|
| X1 INPUT |            |            |            |            |            |            |            |            |            |            |            |          |          |          |          |                        |
| X3 INPUT | 450mV-9V   | 450mV-9V   | 450mV-9V   | 450mV-9V   | 450mV-9V   | 450mV-9V   | 450mV-9V   | 450mV-9V   | 450mV-9V   | 450mV-9V   | 450mV-9V   | NA       | NA       | NA       | NA       | NA                     |

# 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, we recommend that you 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).

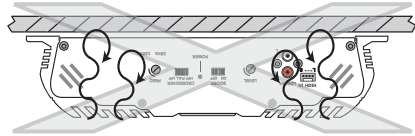
## MOUNTING

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, as to prevent any potentially expensive mistakes.

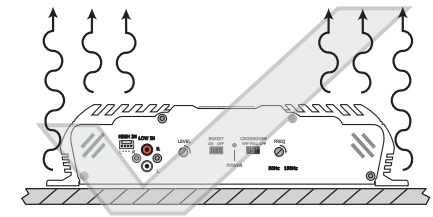
### Incorrect Mounting

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



### Correct Mounting

Heat is lifted from the amplifier heatsink.



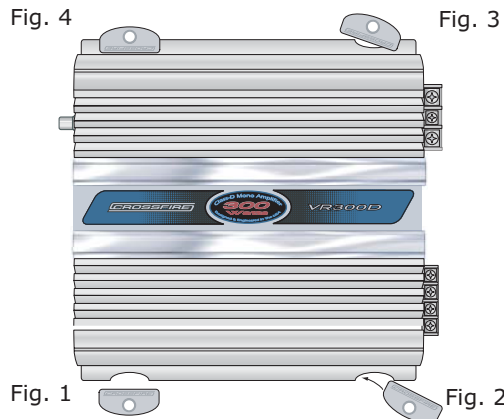
## Tab Installation

(Fig. 1) Shows that this amplifier does NOT have the mounting feet in place.

(Fig. 2) Place one end of the foot in the slot. Make certain it is facing in the proper direction.

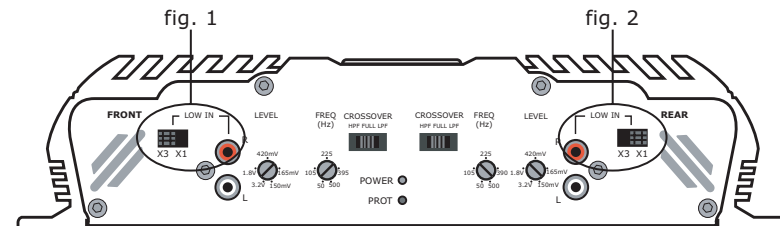
(Fig. 3) With a small rubber mallet, hammer the opposite end of the foot until it snaps into the slot correctly.

(Fig. 4) With the foot in place, it is normal for it to have minimal play.



## Input Sensitivity

This amplifier maybe equipped with an input sensitivity switch(s) (fig. 1 and 2) which are meant to assist in producing its rated power when using a head unit with low voltage preamp outputs. For example, if your model amplifier has this switch(s) and is afixed to the "X3" position (fig. 1) the amplifier is most sensitive to an input voltage range from 450mV-9V, where as when set to the "X1" position it is most sensitive to an input voltage range from 150mV-3V. However, this does not mean you can connect or splice speaker level outputs from a head unit to the RCA terminals of the amplifier.



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 system is not up to these specifications, we recommend having it checked by an automotive mechanic before you further the installation.

### POWER WIRE AND 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 AWG | FUSE | MODEL:  | WIRE AWG | FUSE |
|--------|----------|------|---------|----------|------|
| VR142  | 10       | 20   | VR804   | 4        | 100  |
| VR202  | 10       | 25   | VR401   | 8        | 50   |
| VR302  | 10       | 30   | VR705D  | 4        | 100  |
| VR402  | 8        | 40   | VR300D  | 8        | 40   |
| VR602  | 8        | 60   | VR600D  | 8        | 60   |
| VR1202 | 4 x 2    | 170  | VR1000D | 4        | 120  |
| VR354  | 10       | 25   | VR2000D | 4 x 2    | 240  |
| VR404  | 8        | 40   |         |          |      |

### POWER

Power wires need to 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 and safest 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.

### GROUND

The wire used for ground should be of the same gauge as the power wire. Make sure to choose a different color (generally black) so that you do not 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

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.

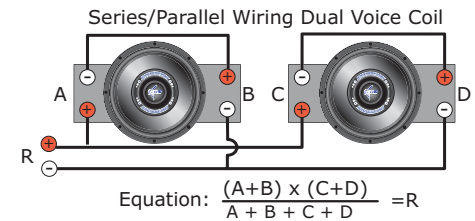
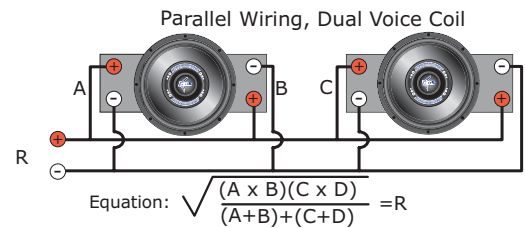
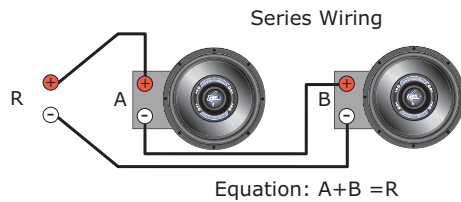
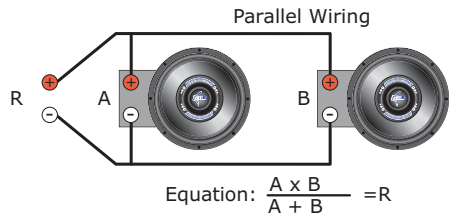
Once the head unit is pulled from the dash, find the remote turn-on located in the wiring harness of the head unit. The majority of vehicles will be using an after market head unit when installing an after market amplifier. These after market head units generally use a blue or blue/white colored wire as the remote turn-on lead. In most cases the blue/white lead is usually the remote turn on lead. However, when using a factory radio, the power antenna wire may be used as a turn-on lead. You must first test this lead to make sure that it remains energized regardless of the source the head unit is switched to. The antenna lead will energize when switched to the tuner mode, but turn off when the unit is switched to tape/CD player. 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-awg wire to connect the amplifier to this lead. Connect this lead to the head unit using a mating terminal or by soldering the three points together, but be sure to heatshrink the connection. If possible run this wire along side of the power wire using the same precautions.

# SPEAKER OUTPUT

## LOAD

Please be aware of the minimum impedance you may apply to your particular model amplifier. See chart below for more information. Any lower impedance than the minimum can send the amplifier into current protection or 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.

| MODEL  | STEREO | MONO  | MODEL       | STEREO | MONO  |
|--------|--------|-------|-------------|--------|-------|
| VR142  | 2 Ohm  | 4 Ohm | VR404       | 2 Ohm  | 4 Ohm |
| VR202  | 2 Ohm  | 4 Ohm | VR804       | 2 Ohm  | 4 Ohm |
| VR302  | 2 Ohm  | 4 Ohm | VR705D(F&R) | 2 Ohm  | 4 Ohm |
| VR402  | 2 Ohm  | 4 Ohm | (Sub)       | N/A    | 2 Ohm |
| VR602  | 2 Ohm  | 4 Ohm | VR300D      | N/A    | 2 Ohm |
| VR1202 | 2 Ohm  | 4 Ohm | VR600D      | N/A    | 1 Ohm |
| VR401  | N/A    | 2 Ohm | VR1000D     | N/A    | 1 Ohm |
| VR354  | 2 Ohm  | 4 Ohm | VR2000D     | N/A    | 2 Ohm |



## 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.

# CONNECTING THE WIRES

At this point, the power, ground, remote, and speaker 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.

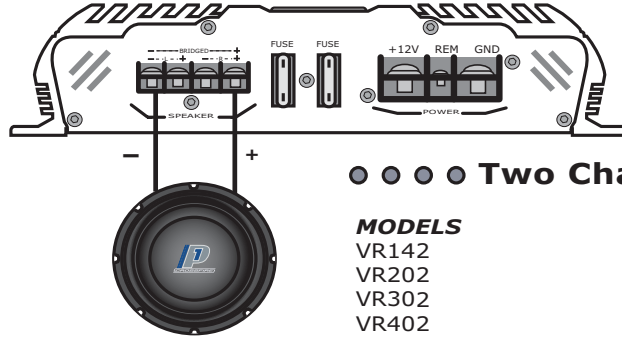
**NOTE:** Not all models have screw type connectors. Other models use "Discrete Mount" connectors which require bare wire installation (no connector needed).

# WIRING DIAGRAMS

## Single Channel Operation (bridged)

**MODELS**

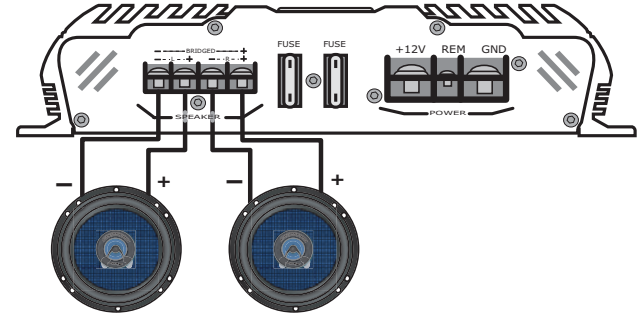
- VR142
- VR202
- VR302
- VR402
- VR602
- VR1202



## Two Channel Operation (stereo)

**MODELS**

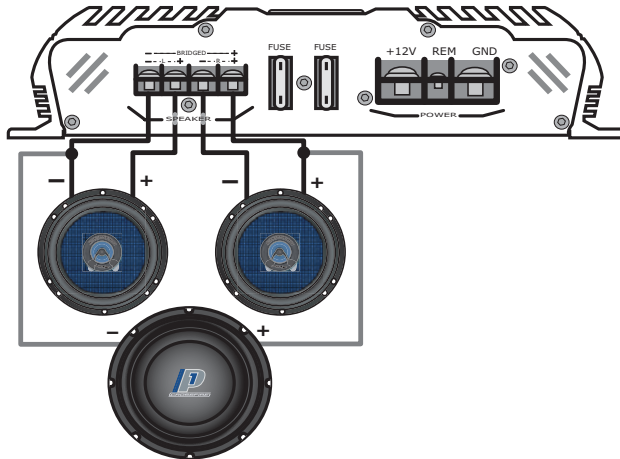
- VR142
- VR202
- VR302
- VR402
- VR602
- VR1202



## Three Channel Operation (stereo/mono)

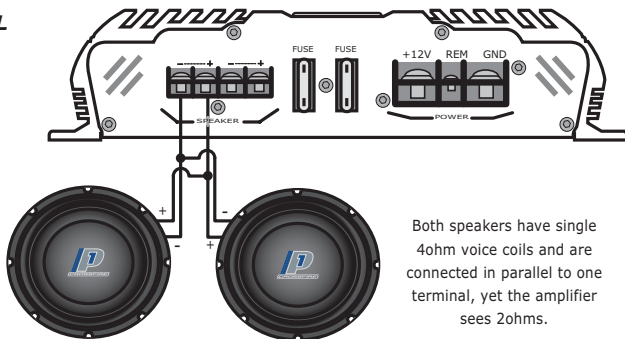
**MODELS**

- VR142
- VR202
- VR302
- VR402
- VR602
- VR1202

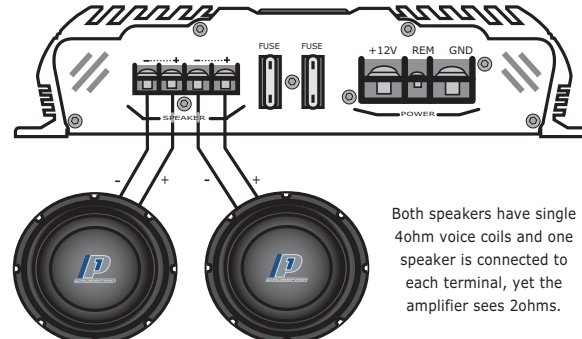


## Mono Block Configuration Only

**MODEL**  
VR401



Both speakers have single 4ohm voice coils and are connected in parallel to one terminal, yet the amplifier sees 2ohms.

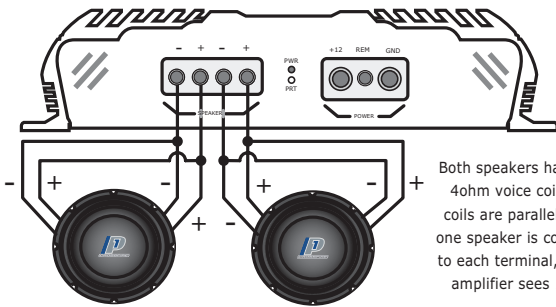


Both speakers have single 4ohm voice coils and one speaker is connected to each terminal, yet the amplifier sees 2ohms.

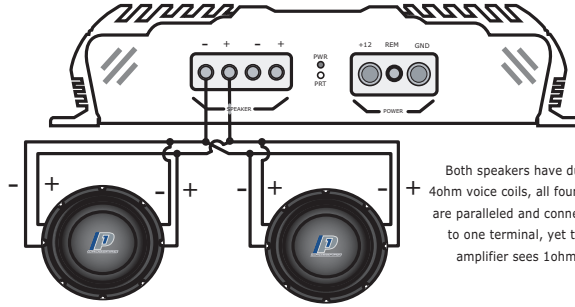
# WIRING DIAGRAMS CONTINUED

## Mono Block Configuration (cont)

**MODELS**  
VR300D  
VR600D  
VR1000D  
VR2000D



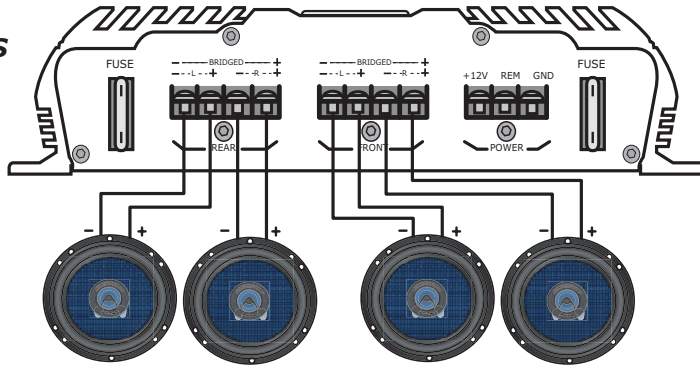
Both speakers have dual 4ohm voice coils, the coils are paralleled and one speaker is connected to each terminal, yet the amplifier sees 1ohm.



Both speakers have dual 4ohm voice coils, all four coils are paralleled and connected to one terminal, yet the amplifier sees 1ohm.

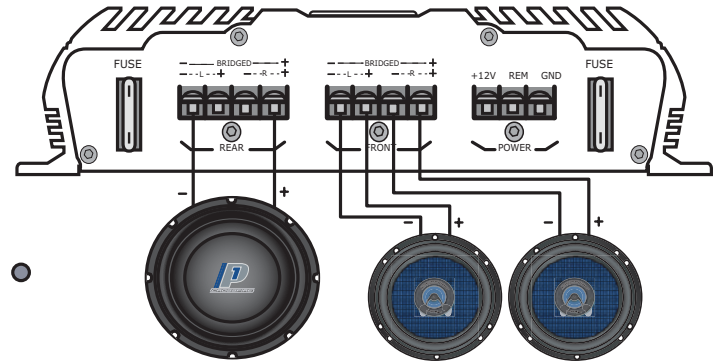
## Four Channel Operation (stereo)

**MODELS**  
VR354  
VR404  
VR804



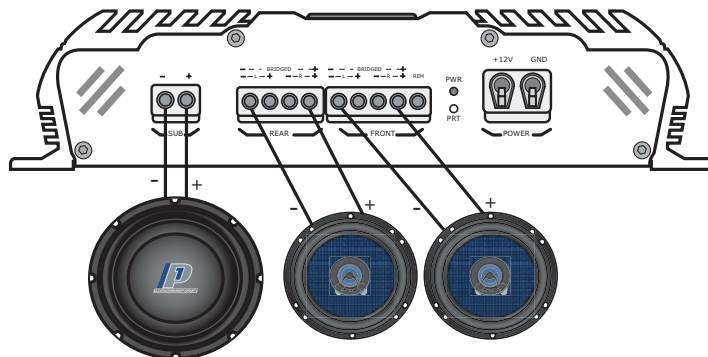
## Three Channel Operation (stereo & mono)

**MODELS**  
VR354  
VR404  
VR804



## Three Channel Operation (mono)

**MODEL**  
VR705D





The VR401, VR300D, VR600D, VR1000D and VR2000D are single channel amplifiers. Unlike most Crossfire amplifiers, these operate as single channel, therefore **one amplifier cannot be bridged by itself**. 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.

## PREAMP FEATURES

### CROSSOVER

On the side panel of your amplifier is a potentiometer marked 50Hz-150Hz or on some models it is marked 50Hz-250Hz. 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. Note that full will override the crossover completely.

Note: All four channel amplifiers 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 and we suggest you follow those recommendations.

#### 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 centered around 45Hz will be added. In the "OFF" position no boost is added to the output signal. This boost switch is available on specific models only. Please see specification chart for verification. Crossfire highly recommends using this feature only on amplifiers powering subwoofers.

## SIGNAL INPUTS

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 signal cable manufacturers will probably not have the exact length necessary for your vehicle. If you are 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 run 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 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 connected the signal cables to the head unit, slide the unit back into the dash. Make sure the unit is in securely.

A proprietary feature to the four channel amplifiers including the VR705D is a "Combining" switch located underneath the amplifier. With this switch set to the "2CH" position allows you to only feed the "Front" inputs an audio signal, but still use all four output channels with independent gain controls. This is a great convenience factor if the headunit you are using only has a single pre-amp output.

Separate to the VR705D only is a "Sub Input" selector switch. With this switch positioned to "CH 1-4" the fifth channel will sum to the signal input of "CH 1-4". Please see diagram in PG-7 for more information. Or if you have any doubts please call your authorized Crossfire dealer or contact Crossfire directly at (562) 906-0800

### HIGH LEVEL INPUTS

**\*If your model amplifier has an "Input Sensitivity" switch you may go on to the next section.**

Select models have "High level Inputs" marked "High In". Use these 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 in PG-7.

### INPUT SENSITIVITY (DO NOT CONNECT SPEAKER LEVEL OUTPUTS TO THIS TERMINAL)

**\*If your model amplifier has a "High Level Input Plug" you may go on to the next section.**

Select models have an Input sensitivity switch(s) which are meant to assist the amplifier in producing its rated power when using a head unit with low voltage preamp outputs. For example, if your particular amplifier has this switch(s) and is affixed to the "**X3**" position the amplifier is most sensitive to an input voltage range from 450mV-9V. When this switch is set to the "**X1**" position it is most sensitive to an input voltage range from 150mV-3V.

### 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.

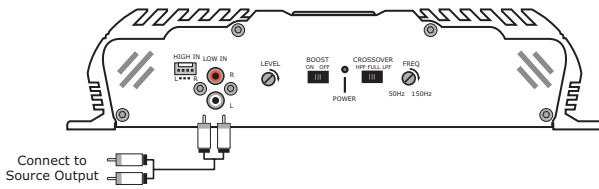
**Remember that the gain control is not a volume knob. Ignoring the three steps above may leave you with damaged speakers and possibly damaged amplifier(s).**



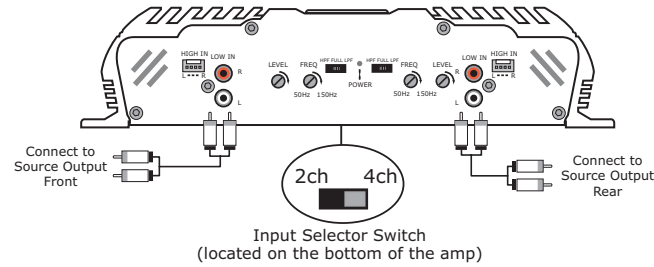
Please note that your amplifier may differ from those shown on this page. The following page has additional model amplifiers connection diagrams and configurations.

## Low Level Inputs

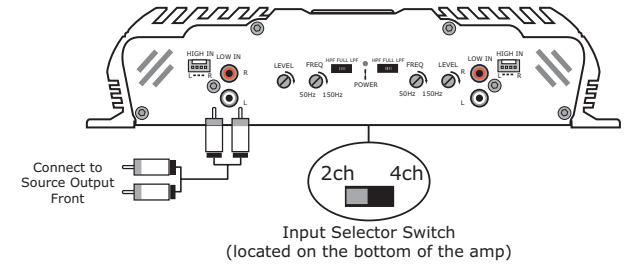
### ALL 2 CH. MODELS



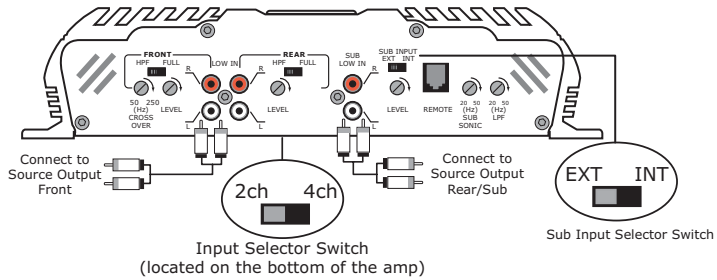
### ALL 4 CH. MODELS



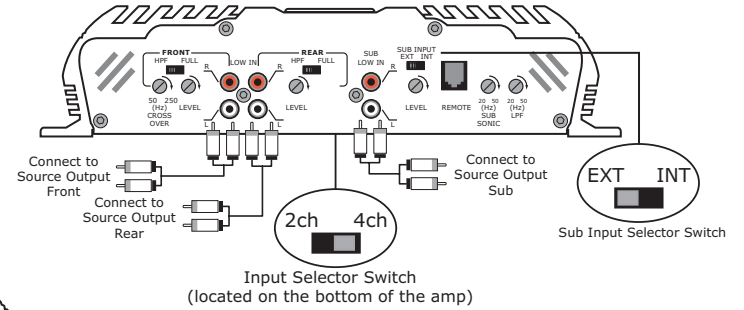
### ALL 4 CH. MODELS



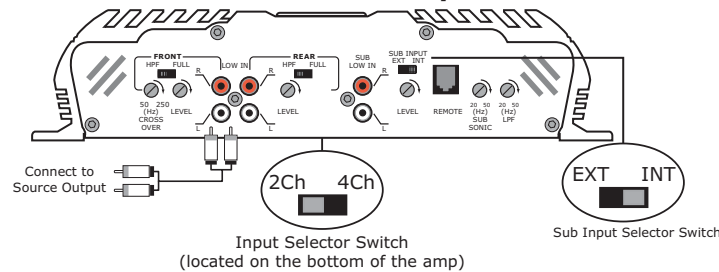
### 705D 2 Channel Input with Sub



### 705D 4 Channel Input with Sub



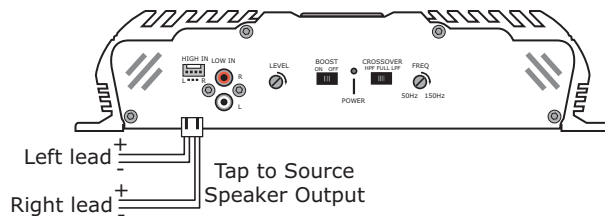
### 705D 2 Channel Input



## High Level Inputs

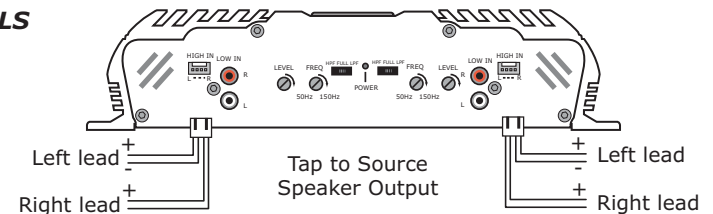
### MODELS

VR142  
VR202  
VR302  
VR401  
VR300D



### MODELS

VR354  
VR404  
VR804







## IMPORTANT!!

The majority of failures we see with our Class D amplifiers are due to people using them in cars without the proper electrical considerations. There is a common misconception about Class D amplifiers that contributes to this problem. Many people believe that, for example, since a 1000D is class D and it is very efficient that it doesn't pull high amounts of current. This is only partly true. A 1000D is capable of drawing 120 amps of current at max draw. Now, only drawing 120 amps of current to make over 1000 watts is very efficient, some class A/B amplifiers need over 200 amps to make the same power. A normal stock automobile sees it differently, 120 amperes is a very high amount of current and very taxing on its electrical system.

We at Crossfire strongly suggest using one dedicated, high quality, battery per 1000D amplifier or per two 600D amplifiers. We also recommend upgrading the vehicles alternator whenever possible.

It is very important to keep your battery voltage above 11 volts and as close to 14.4 volts as possible. Not only do you get more power at 14.4 volts but you are risking serious damage to your amplifier below 11 volts. Ohms law states that current equals power (watts) divided by voltage. This means that current and voltage are inversely proportional, in other words as your battery voltage falls your amplifier has to draw more current to make the same amount of power. At a certain point the amp draws so much current that it damages components in its input section. This is very common in all Class D amplifiers. The solution is to keep your battery voltage between 12 volts and 14.4 volts. If you follow the tips below you will get the best and most reliable performance from our Class D amplifiers.

## REMEMBER !!!

1. Make sure the automobile has an electrical system that will support the audio systems current draw.
2. Upgrading your alternator for multiple amplifiers is recommended.
3. Use at least one high quality battery per 1000D or per two 600D's.
4. For runs of 20ft or less use at least one 4 awg power wire and one 4 awg ground wire per 1000D, 8 awg for the 600D. If you are using one wire with a distribution block for multiple amps, make sure to use a larger gauge wire for the main feed.

Be sure to test battery voltage at the amplifier terminals while the system is playing at high volume. Make sure this reading stays as close to 14.4 volts as possible, if this measurement is below 11volts see above tips or call Crossfire Technical Support (562) 906-0800.