



**xtreme<sup>®</sup>**

**amplifier**

**1500X  
2300X  
4600X**

owner's manual

## **CONGRATULATIONS**

Congratulations for choosing an Xtreme Series power amplifier, by Directed Audio. This high performance product has been designed and engineered by Directed Electronics, the industry leader in high quality automotive security and audio equipment since 1990. With the Xtreme Series power amplifiers, Directed Audio continues to set new standards of performance, reliability, and affordability in the mobile electronics industry.

Featuring high-efficiency MOSFET power supplies and flexible built-in crossovers housed in a rugged, extruded aluminum

extrusion with black chrome trim panels, Xtreme power amplifiers will excite and delight car audio enthusiasts with years of high performance audio reproduction.

Xtreme Series amplifiers come with a two-year limited warranty if sold and installed by an authorized Directed dealer. If not installed by an authorized dealer, Xtreme Series amplifiers are covered by a one-year, parts-and-labor limited warranty. Be sure to retain your original purchase receipt, and refer to the warranty section of this guide for full details about your coverage.

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## **LIMITED TWO-YEAR CONSUMER WARRANTY**

Directed Electronics, Inc. promises to the original purchaser, to replace this product should it prove to be defective in workmanship or material under normal use, for a period of two years from the date of purchase by the dealer as indicated by the date code marking of the product **PROVIDED** the product was installed by an authorized Directed dealer. During this two-year period, there will be no charge for this replacement **PROVIDED** the unit is returned to Directed, shipping pre-paid. If the unit is installed by anyone other than an authorized Directed dealer, the warranty period will be 1 year from the date of purchase by the dealer as indicated by the date code marking of the product. During this 1-year period there will be no charge for this replacement **PROVIDED** the unit is returned to Directed, shipping pre-paid. This warranty is non-transferable and does not apply to any unit that has been modified or used in a manner contrary to its intended purpose, and does not cover damage to the unit caused by installation or removal of the unit. This warranty is void if the product has been damaged by accident or unreasonable use, neglect, improper service or other causes not arising out of defects in materials or construction. **ALL WARRANTIES INCLUDING BUT NOT LIMITED TO EXPRESS WARRANTY, IMPLIED WARRANTY, WARRANTY OF MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE, AND**

**WARRANTY OF NON-INFRINGEMENT OF INTELLECTUAL PROPERTY ARE EXPRESSLY EXCLUDED TO THE MAXIMUM EXTENT ALLOWED BY LAW, AND DIRECTED NEITHER ASSUMES NOR AUTHORIZES ANY PERSON TO ASSUME FOR IT ANY LIABILITY IN CONNECTION WITH THE SALE OF THE PRODUCT. DIRECTED HAS ABSOLUTELY NO LIABILITY FOR ANY AND ALL ACTS OF THIRD PARTIES INCLUDING ITS AUTHORIZED DEALERS OR INSTALLERS.** Unit must be returned to Directed, postage pre-paid, with: consumer's name, telephone number, and address, authorized dealer's name and address, and product description. **IN ORDER FOR THIS WARRANTY TO BE VALID, YOUR UNIT MUST BE SHIPPED WITH PROOF OF INSTALLATION BY AN AUTHORIZED DIRECTED DEALER. ALL UNITS RECEIVED BY DIRECTED FOR WARRANTY REPAIR WITHOUT PROOF OF DIRECTED DEALER INSTALLATION WILL BE COVERED BY THE LIMITED 1-YEAR PARTS AND LABOR WARRANTY.** **Note:** This warranty does not cover labor costs for the removal and reinstallation of the unit. **BY PURCHASING THIS PRODUCT, THE CONSUMER AGREES AND CONSENTS THAT ALL DISPUTES BETWEEN THE CONSUMER AND Directed SHALL BE RESOLVED IN ACCORDANCE WITH CALIFORNIA LAWS IN SAN DIEGO COUNTY, CALIFORNIA.**

## **FEATURES**

- High-speed MOSFET power supplies
- Complimentary bipolar transistor outputs
- Mono/stereo/mixed mono operation (1500X mono only)
- 2 ohm stereo stable/4 ohm mono stable (1500X 2 ohm mono stable)
- Built-in 2-way variable crossovers (1500X LP only)
- +6 or +12 dB switchable bass boost (4600X switchable +12dB)
- Adjustable input gain
- Power/status LED's
- Thermal, short-circuit, over-current, and reverse polarity protection
- Gold-plated RCA inputs
- Heavy duty screw terminals accept up to 8 AWG cables

## **WARNING**



High-powered car audio systems may produce sound pressure levels that exceed the threshold at which hearing loss may result.

They may also impair a driver's ability to hear traffic sounds or emergency vehicles. Use common sense and practice safe listening habits when listening to or adjusting your audio system.

## **INSTALLATION GUIDELINES**

1. Please read this owner's manual carefully before installing this amplifier.
2. Disconnect the battery ground terminal prior to making any electrical connections.
3. Check for any hazards or obstructions such as gas tanks, fuel or brake lines, and wiring harnesses before mounting the amplifier.
4. Pick a mounting location that will provide adequate access and ventilation and protect the amplifier from heat, moisture, and dirt.
5. Avoid sharp metal areas when routing cables to the amplifier, and run RCA cables away from the power cables and other potentially noisy car harnesses.

6. The amplifier should be grounded with a short, heavy gauge wire connected directly to the car at a bare metal surface, preferably scraped body sheet metal. Do not use factory ground locations, seat bolts, or brackets that are spotwelded.
7. Always fuse your power connection within 8 to 10 inches of the battery terminal. Use a fuse or circuit breaker rated slightly more than the on-board fuse(s) of the amplifier(s). The gauge of power wire used should take into account the total current draw of the system, and the length of wire used. IASCA and other auto sound competition organizations have charts available for this; you can also find a chart in the MECP study guide. Minimum wire gauge recommendations for the individual amplifiers are listed on the specification page. Always use the same gauge wire for the amplifier ground that you use for the power wire. Be sure to examine the battery ground cable of the vehicle, and if necessary, upgrade it by adding an additional ground wire that is the same gauge as the amplifier power wire. Remember, the amplifier can only deliver its rated output when it is not current limited by the power and ground supply wires.
8. This amplifier is designed to drive a speaker load that measures from 2 to 8 ohms. Keep in mind that heat is the long-term enemy of automotive electronics and the lower your speaker load, the more heat is generated. For low impedance speaker applications or restricted ventilation installations, an external cooling fan may be advisable.
9. Battery and ground connections to the vehicle should be made with crimped ring terminals of the appropriate size (surface area is what counts); soldering the terminals after crimping is also recommended.
10. Due to the high-frequency MOSFET switching power supply, filtering the power cable is not generally required (remember that the amp can't deliver full output if the power supply is restricted). Proper grounding of the signal source is mandatory for the amplifier to reach its performance peak. If the RCA inputs are not grounded adequately via the signal source, electrical noise from the vehicle may be picked up in the system.

## **FRONT PANEL CONNECTIONS/CONTROLS**

**NOTE:** The step numbers listed below are referenced on the Input Wiring Diagram.

1. **RCA Input Jacks** - Accepts line level outputs from head units or signal processors at voltages between 150mV and 4 volts.
2. **Input Gain Adjustment** - Controls amplifier sensitivity and is used to match the input level of the amplifier to the output level of the signal source.
3. **Crossover Frequency Adjustment** - Adjusts the crossover point for the on-board active crossovers.
4. **Crossover Selection Switch** - Controls the type of filter for the on-board active crossover. FLAT does not attenuate any frequencies and is for full-range speaker systems. HPF attenuates low frequencies and is used for mid-range speakers and tweeters. LPF attenuates high frequencies and is used for subwoofers speakers.
5. **Bass EQ Switch** - Adds an additional 6 or 12 db of bass boost to the speaker output (4600X 12 db only).
6. **Status LED** - Will light BLUE to indicate the amplifier is on and operating normally, and will be RED if the amplifier shuts down due to short circuit, or overheating detected by on-board protection circuitry.

**NOTE:** The 2300X and 4600X amplifiers require that the system remote power be cycled off and on again to restart the amplifier after a protection shutdown.

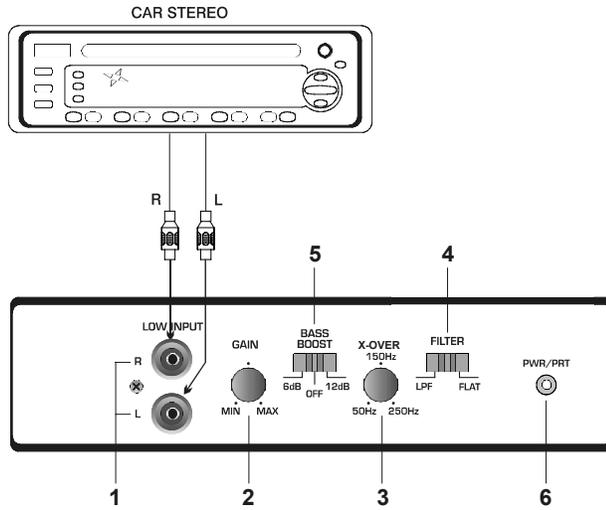
The 1500X amplifier will cycle off and automatically turn back on when the fault condition clears.

The amplifier should be inspected for proper ventilation clearance on all sides of the amplifier (2-inches). The speaker wiring should be inspected for any shorts.

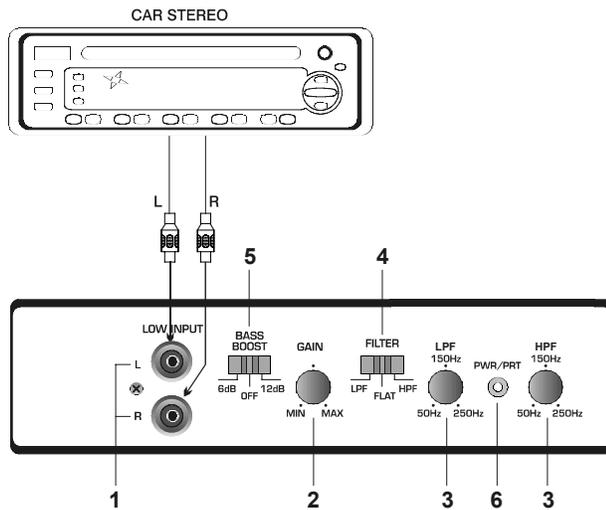
**NOTE:** The 1500X and 2300X amplifiers have one combined Power/Protection (BLUE/RED) LED, the 4600X amplifier has separate Power (BLUE) and Protection (RED) LEDs.

## INPUT WIRING DIAGRAMS

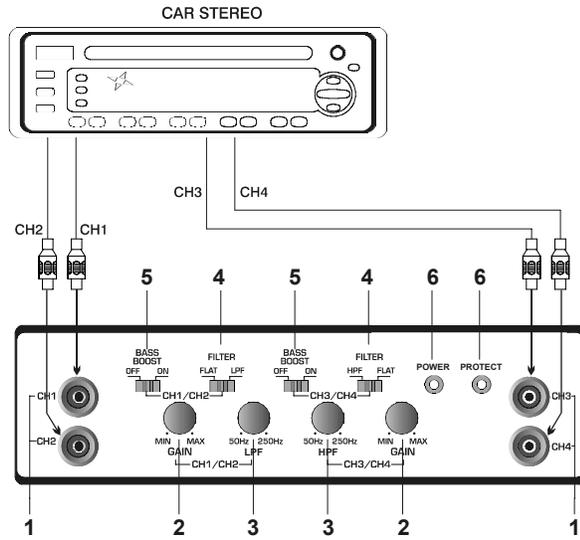
### MONO CHANNEL 1500X



### TWO CHANNEL 2300X



**FOUR CHANNEL 4600X**



## **CROSSOVER SETTINGS AND GAIN ADJUSTMENT**

Your Xtreme Series power amplifier by Directed Audio needs to be adjusted carefully to achieve maximum performance. These are some guidelines to follow when fine-tuning the amplifier.

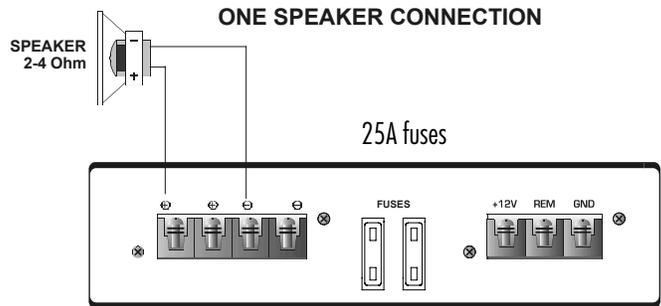
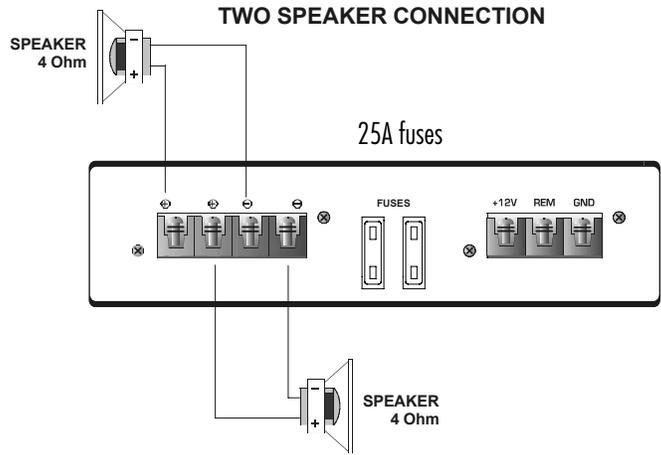
- For full-range and simultaneous stereo/mono bass applications, the crossover selection switch should be set to FLAT. If the amplifier is driving your subwoofers, set the switch to LPF, and for mid-bass/midrange output, set to HPF.
- The crossover frequency control needs to be adjusted to suit your particular system. For subwoofer applications, try to keep the setting low enough to prevent the image smearing (you should not be able to hear male voices from the subwoofer) but not so low as to create a gap between the subwoofer and the mid-bass/midrange speakers. For mid-bass/midrange settings, try to keep the setting low enough to keep your sound stage in front of you, without overdriving the speaker. It will be to your advantage to spend some extra time with this adjustment, listening to familiar music or system set-up discs to achieve the kind of musical reproduction that you prefer.
- The gain adjustment allows you to set proper signal match for clean, quiet amplifier operation. For full-range and simultaneous stereo/mono bass applications, start by playing some music you are familiar with. With the gain adjustment on the amplifier in the middle of its rotation, bring up the volume on your head unit to the 3/4 volume setting or until you start to hear distortion or clipping. If you hear distortion before you reach the 3/4 volume setting of your head unit, reduce the gain setting on the amplifier and start to raise the head unit volume again. When you can listen to the music at or slightly above 3/4 on your head unit without audible distortion, slowly raise the gain of the amplifier until distortion is heard, then back off the gain until the distortion is not audible. This setting will allow you to reach full output with all but the quietest of source material, while avoiding excessive noise in the system.
- The same procedure should be used for adjusting the amplifier when the on-board crossover is set to LPF or HPF, but you will also have to take into consideration the effect that gain adjustment has on system frequency response and imaging. Again, plan on spending some time with music that you know, getting the gain and crossover settings the way you like. Test discs and analyzers may help with this process, but in the end it's your ears that count - listen to the music!

## REAR PANEL CONNECTIONS

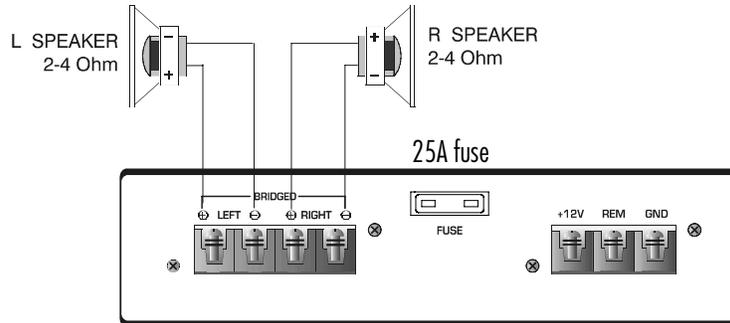
1. **Speaker Out Terminals** - Connect the speakers to these terminals. (Refer to the *Speaker Connection* section of this guide.)
2. **Power Fuse** - This fuse protects the amplifier against internal electrical damage and is meant to protect the amplifier only. All other power connections should be fused at the source.
3. **(+) 12 Volt Power** - Connect this terminal through a FUSE or CIRCUIT BREAKER to the positive terminal of the vehicle battery or the positive terminal of an isolated audio system battery.  
  
**WARNING:** Always protect this power wire by installing a fuse or circuit breaker of the appropriate size within 12 inches of the battery terminal connection.
4. **Remote Turn On** - This terminal turns on the amplifier when (+) 12 volt is applied to it. Connect it to the remote turn on lead of the head unit or signal source. If a (+) 12 volt remote turn lead is not available, a Remote Power Adapter (P/N #55000) can be used to supply a remote turn on signal. DO NOT connect this terminal to constant (+) 12 volt.
5. **Ground** - Connect this terminal directly to the sheet metal chassis of the vehicle using the shortest wire necessary to make this connection. Always use wire of the same gauge or larger than the (+) 12 volt power wire. The chassis connection point should be scraped free of paint and dirt. Use only quality crimped and/or soldered connectors at both ends of this wire. DO NOT connect this terminal directly to the vehicle battery ground terminal or any other factory ground points.

# SPEAKER CONNECTIONS

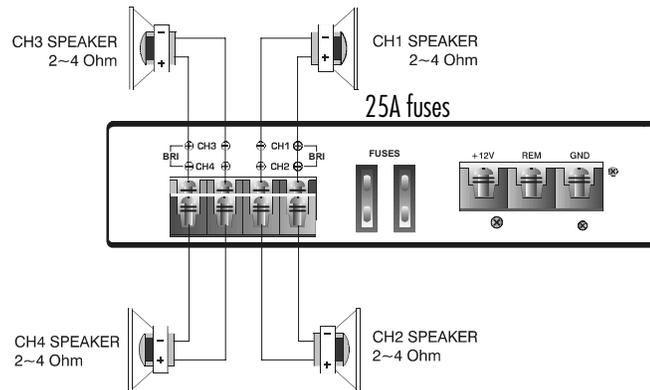
## MONO CHANNEL 1500X



**TWO CHANNEL 2300X**



**FOUR CHANNEL 4600X**

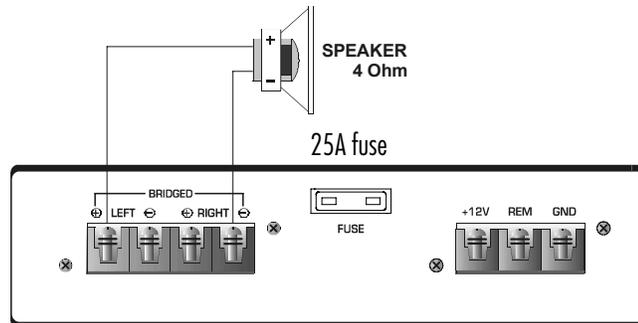


Note that the two speakers & four speakers have been connected to the four terminal following the (+) and (-) graphic. Your speaker terminals may be marked (+) and (-) or there may be red dot by one terminal which means the same as (+).

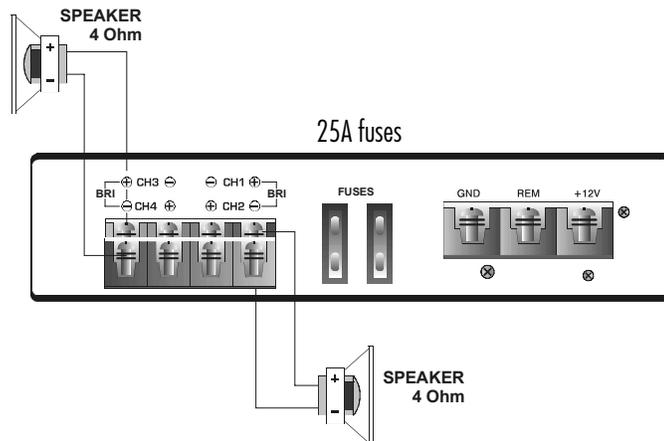
Connecting the speakers in this manner assures that the two speaker cones will move in and out together according to the original recording. If one of the two speakers is reversed, stereo imaging and bass response will be degraded.

## BRIDGE MODE

### TWO CHANNEL 2300X



### FOUR CHANNEL 4600X



Note that the two speakers & four speakers have been connected to the four terminal following the (+) and (-) graphic. Your speaker terminal may be marked (+) and (-) or there may be red dot by one terminal which means the same as (+).

Connecting the speakers in this manner assures that the two speaker cones will move in and out together according to the original recording. If one of the two speakers is reversed, stereo imaging and bass response will be degraded.

## **SPECIFICATIONS**

<b>Xtreme models</b>	<b>1500X</b>	<b>2300X</b>	<b>4600X</b>
Type	Mono block	2-channel	4-channel
Maximum Power	500 watts	300 watts	600 watts
Continuous Power @ 4 ohms (watts RMS)	150 x 1	50 x 2	50 x 4
Continuous Power @ 2 ohms (watts RMS)	250 x 1	75 x 2	75 x 4
Damping Factor	>50	>50	>50
Frequency Response	20Hz-20kHz +/- 1dB	20Hz-20kHz +/- 1dB	20Hz-20kHz +/- 1dB
S/N Ratio (Full power into 4 ohms)	-90dBA	-90dBA	-90dBA
Crossover	LP 50-250Hz 12dB Slope	Variable HP/LP 50-250Hz 12dB Slope	Variable HP/LP 50-250Hz 12dB Slope
Bass EQ	Switch +6/+12dB @ 50Hz	Switch +6/+12dB @ 50Hz	Switch +12dB @ 50Hz
Input Sensitivity	200mV-4V	100mV-4V	100mV-4V
Protection	Thermal, Overcurrent, Short Circuit, Reverse Polarity		
Fuse Size	25A x 2	25A	25A x 2
Minimum Power Wire Gauge	10	12	10

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