



MOSFET POWER AMPLIFIERS

Installation Instructions / Owner's Manual

**QS1500D • QS2150 • QS2250
QS4150 • QS4250**



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***I**NTRODUCTION*

Congratulations on your purchase of a QUANTUM AUDIO state-of-the-art power amplifier. Your selection of a QUANTUM AUDIO product indicates a true appreciation of fine musical reproduction. Whether adding to an existing system or including your Quantum amplifier in a new system, you are certain to notice immediate performance benefits.

***K**EEP YOUR SALES RECEIPT*

Take this time to attach your sales receipt to the manual and put in a safe place. In case of any unforeseen reason this product may need warranty service, your receipt will be necessary to establish purchase date.

***R**ECOMMENDATION*

A power amplifier's performance is only as good as its installation. Proper installation will maximize the system's overall performance. It is recommended that you have our product installed by an authorized QUANTUM AUDIO retailer. However, if you decide to install it yourself, please carefully read through this manual and take your time to do a quality installation.

Due to continuing product improvements and possible manual revisions, we recommend checking our website for latest product information at www.quantumaudio.net.

IMPORTANT! Before making any connections, disconnect the car's battery until the installation is completed to avoid possible damage to the electrical system.

WARNING!

Exposure to high power sound system can cause hearing loss or damage. Listening to your system at loud levels while driving, will impair your ability to hear traffic sounds and emergency vehicles. Use common sense when listening to your system.

Serial # _____

Model # _____



SAFETY PRECAUTIONS

Fuse amplifiers power wire at the battery.

Be sure to fuse the power wire within 12" of the car's battery. This will protect the car's battery in case of a short circuit between the power amplifier and battery. **THIS IS A MUST**, the amplifier's built-in fuse will only protect the power amplifier not the car's battery!

Use high grade wire connectors.

To ensure maximum power transfer and secure safe connections, it is recommended to use high grade barrier spades (for connection at amplifier) and terminal rings (for connection at battery).

Do not run any wires underneath vehicle.

Exposed wires have a chance of being cut or damaged. It is best to run all wires through the vehicle under the carpet and/or side panels. This lends to a cleaner installation and less risk of damage.

Use caution when mounting amplifier.

Remember there are many electrical wires, gas lines, vacuum lines, brake lines as well as a gas tank in the automobile. Make sure you know where they are when mounting the amplifier to avoid puncturing lines, shorting wires or drilling holes in the gas tank.

Run signal wires away from electrical wires.

To avoid possibility of induced noise from the car's electrical system (i.e. popping noises or engine noise), run wires away from the car's electrical wiring.

Make all ground wires as short as possible and at the same point.

In order to reduce the chance of ground loops (i.e. engine noise), make the grounding wire as short as possible to reduce the wire's resistance. Also, when using multiple components, make sure all units are grounded at the same point.

Avoid sharp edges when running the wires.

To avoid the possibility of power, signal or speaker shorts, be careful not to allow the amplifier's wires to come in contact with sharp edges. Use a grommet to protect the wire when running through the fire wall .

FEATURES AND BENEFITS

DC Offset Protection

This circuit protects the output of the amplifier against DC voltage. If for some reason DC voltage is detected at the output stage, the amplifier will shut down protecting the speakers from direct current.

Short Circuit Protection

The circuit protects the amplifier from damage due to a short found in the speakers or wiring. If one of the speakers or its wiring comes in contact with ground, the amplifier will shut down. To resume normal operation, correct the problem and turn the head unit off, then back on. The amplifier will reset and play again.

Thermal Protection

To protect the amplifier circuitry against damage caused by prolonged exposure to high temperatures, a thermal protection circuit is activated if the amplifier reaches excessively high operating temperature. Once the thermal circuit is activated, the amplifier will shut down to cool off. The amplifier will automatically turn back on once it cools down to a safe operating temperature.

Power/Protect Indicator

The power L.E.D. Illuminates green when the amplifier is on and receiving power. The protect LED Illuminates red when the amplifier has gone into protection mode.

Built-in Crossover

The Solar Series amplifiers include a built-in variable **high and low pass crossovers. The crossover features a variable frequency selection (30Hz ~ 250Hz Low Pass and 60Hz ~ 1.2kHz High Pass) for precise high or low pass filtering. **Except QS1500D which has a 40 ~ 150Hz low pass filter.

Bass EQ

For added low frequency performance the amplifiers are equipped with 0~12dB bass boost @ 45Hz.

Stable To 2 Ohm Stereo Mode

The QS2150, QS2250, QS4150 and QS4250 are stable down to 2 ohms in stereo mode and 4 ohms in bridged mode. The QS1500D is stable to 2 ohms mono.



Line Out

One set of full range line outputs have been provided for convenient connection to additional amplifiers in the system.

Power Fusing

This protects the amplifier against short circuits and excessive current.

Remote Turn-on

Automatically turns amplifier on when connected to the head unit's remote output. The amplifier will turn on and off with the head unit to save current consumption. This control also operates the reset circuit for the amplifier's protection. It must be connected with the head unit in order to reset protection circuits.

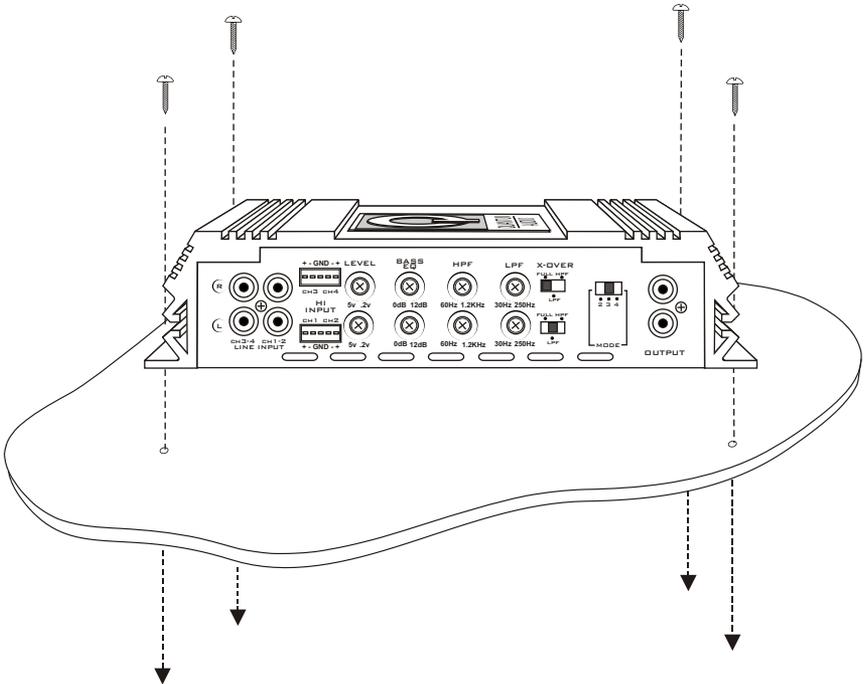
Adjustable Input Sensitivity

Allows you to fine-tune the level matching between your source and the power amplifier.

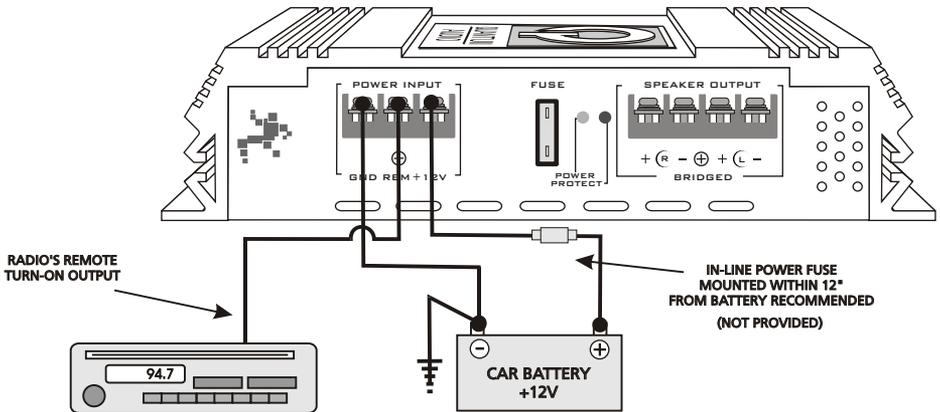
MOUNTING LOCATION

Before you start the installation, it will be necessary to find a mounting location for the amplifier. Find a location in which the amplifier will receive adequate ventilation in order to dissipate the heat it develops during operation. Two popular mounting locations are in the trunk or under the seat.

Select the location in which you wish to mount the amplifier. Use caution when mounting amplifier, there are many wires, gas lines, vacuum lines, brake lines as well as a gas tank in the automobile. Make sure you know where they are when mounting the amplifier to avoid puncturing lines, shorting wires or drilling holes in the gas tank. Once you are ready, use a pencil to mark the mounting holes in the bottom panel. After you have marked the locations of the holes move amplifier out of the way and drill small starter holes to make the tapping screws easier to install. Use provided screws to tighten down the amplifier.



POWER CONNECTIONS



IMPORTANT! Before making any connections, disconnect the car's battery until the installation is completed to avoid possible damage to the electrical system.

Connect the amplifier to the car's battery.

At times, the amplifier will need to draw large levels of current that cannot be provided by any circuit in the car's fuse box. We recommend using a 4 to 8 gauge power wire for your connections depending on the amplifier and length of the wire. Strip one end of the wire and crimp on a barrier spade connect to the terminal on the amplifier marked "+12V". Loosen screw terminal and connect barrier spade and tighten (QS1500D uses bare wire connection). Use caution to make sure no stray wire stands come in contact with surrounding terminals causing short circuits. Run the wire directly to the positive terminal of the car's battery. Make sure to use an in-line fuse within 12" of the car's battery to protect the electrical system and amplifier against short circuits and/or power surges.

Connect the ground terminal of the amplifier to the car's chassis.

For the ground connection, use a 4 to 8 gauge wire (black) to connect to the terminal marked "GND" and then connect it to the car's chassis. Try to keep the length of the cable as short as possible, preferably less than 6". Also make sure that the point on the car where the connection is to be made is free of paint and dirt.

Connect the remote terminal of the amplifier to a switchable +12V source.

This connection allows the amplifier to be turned on and off with the power control of the radio. If the radio has a REMOTE output terminal, connect it to the amplifier's terminal marked "REM" (using a 16 gauge wire or heavier). Now when the radio is turned on, the amplifier will automatically turn on. This connection can also be made to the radio's PowerAntenna wire.

SIGNAL & SPEAKER CONNECTIONS

Connect the RCA output of the head unit (AM/FM cassette player, CD, or DAT) to the RCA input terminals of the amplifier.

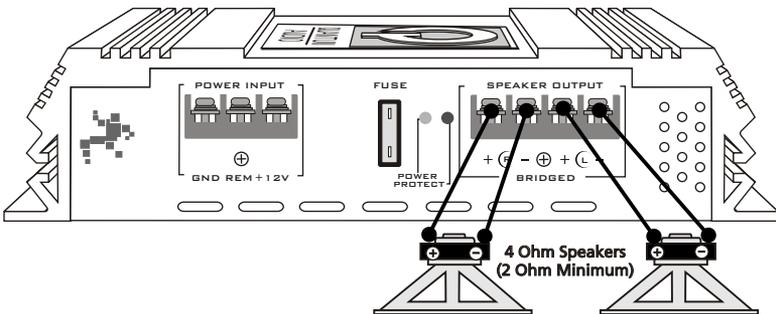
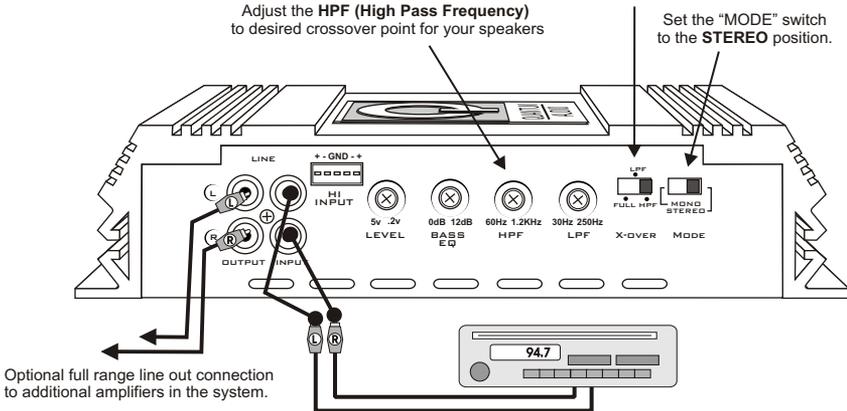
To make these connections, we recommend high quality RCA cables, which are available at your local car audio retailer. Run signal wires away from electrical wires to avoid possibility of induced noise from the car's electrical system (i.e. popping noises or engine noise). Please note that when making these connections the signal inputs correspond with the speaker outputs.

QS2150 & QS2250 CONNECTIONS (STEREO MODE)

In this example we have selected
HPF (High Pass Filter) for our XOVER.

Adjust the HPF (High Pass Frequency)
to desired crossover point for your speakers

Set the "MODE" switch
to the **STEREO** position.

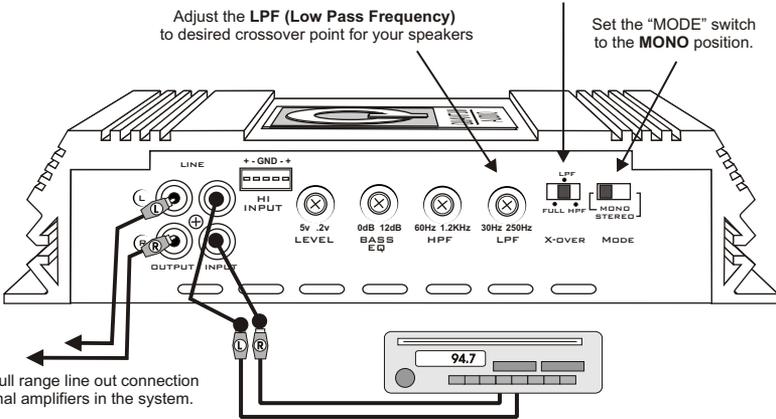


QS2150 & QS2250 CONNECTIONS (MONO MODE)

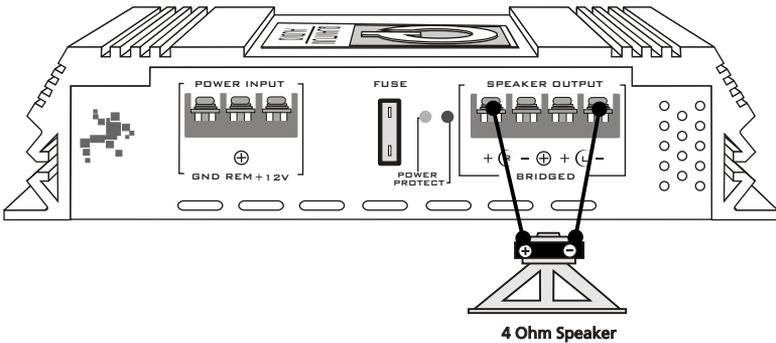
In this example we have selected
LPF (Low Pass Filter) for our XOVER.

Adjust the **LPF (Low Pass Frequency)**
to desired crossover point for your speakers

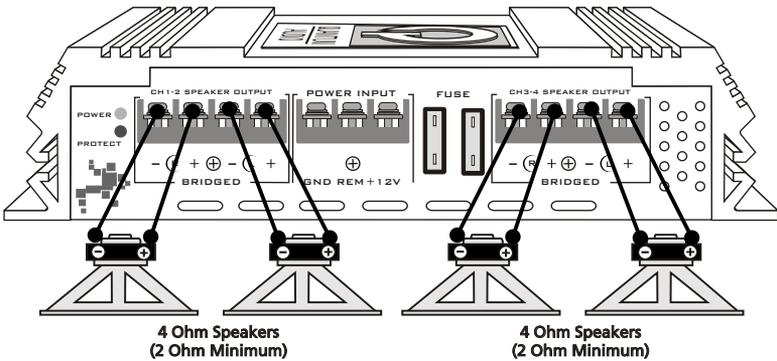
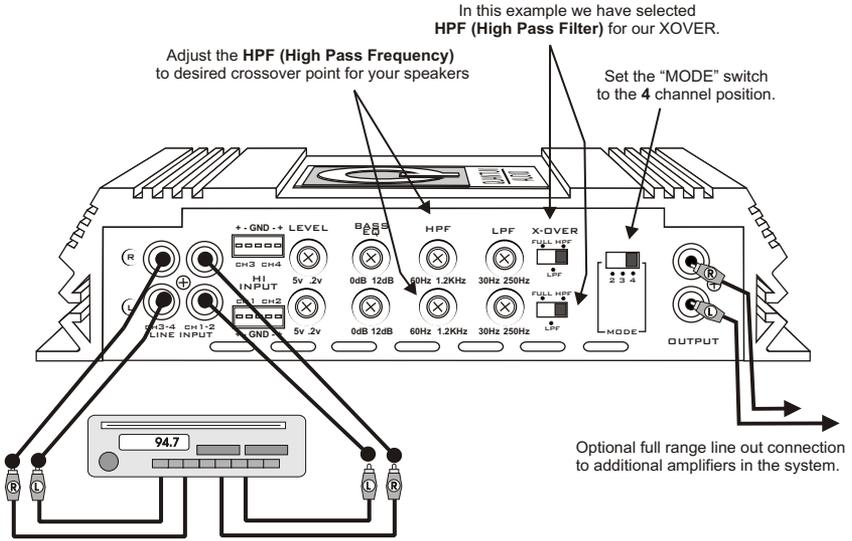
Set the "MODE" switch
to the **MONO** position.



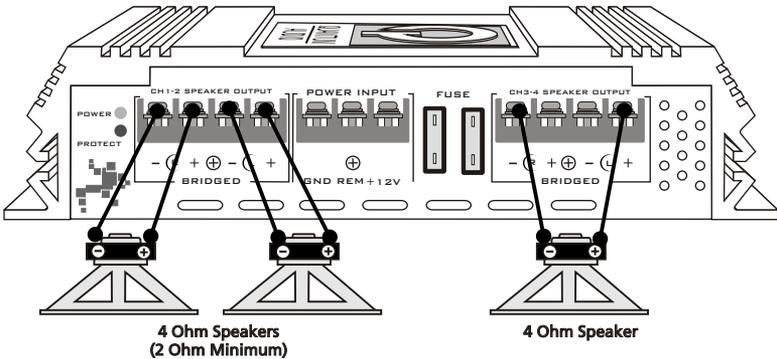
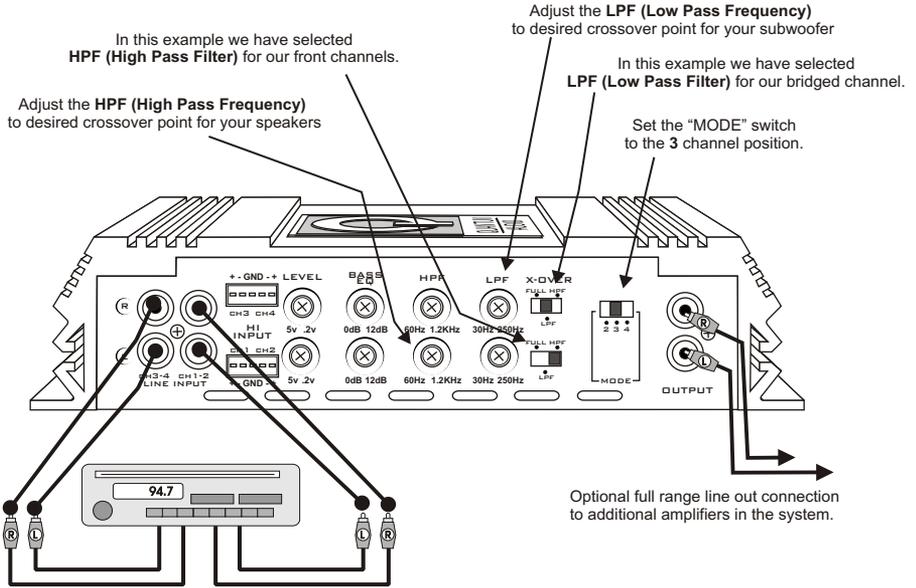
Optional full range line out connection
to additional amplifiers in the system.



QS4150 & QS4250 CONNECTIONS (4 CHANNEL MODE)

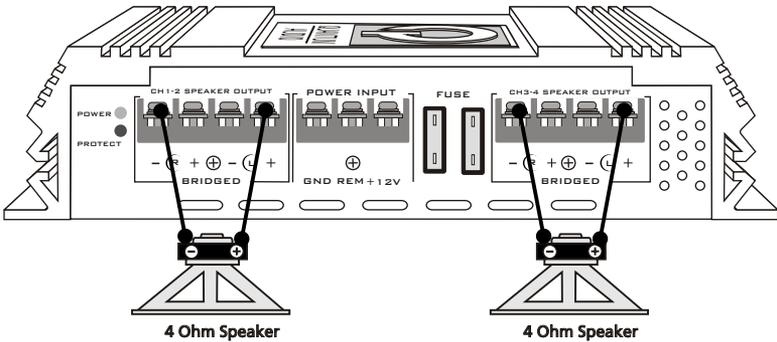
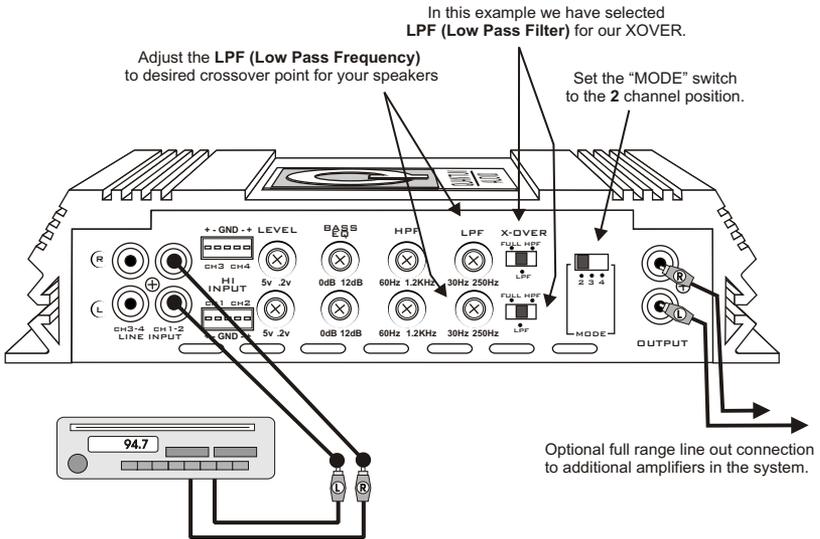


QS4150 & QS4250 CONNECTIONS (3 CHANNEL MODE)



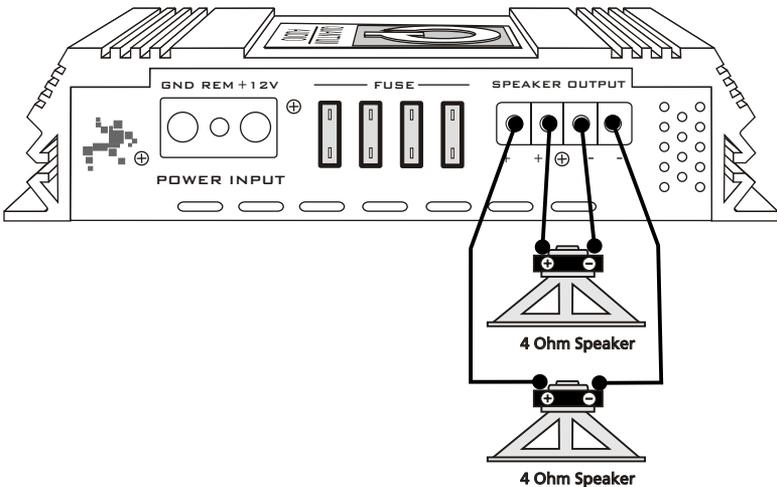
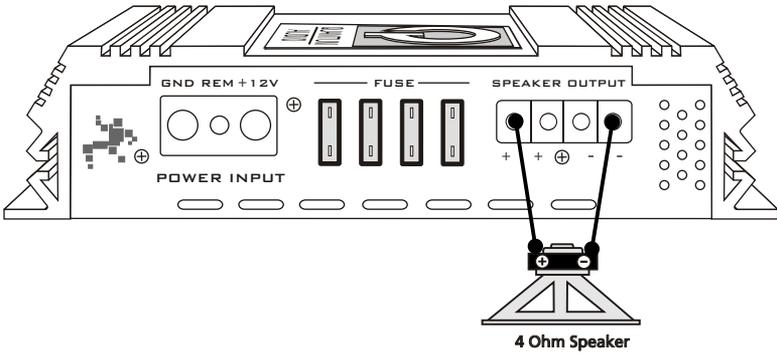
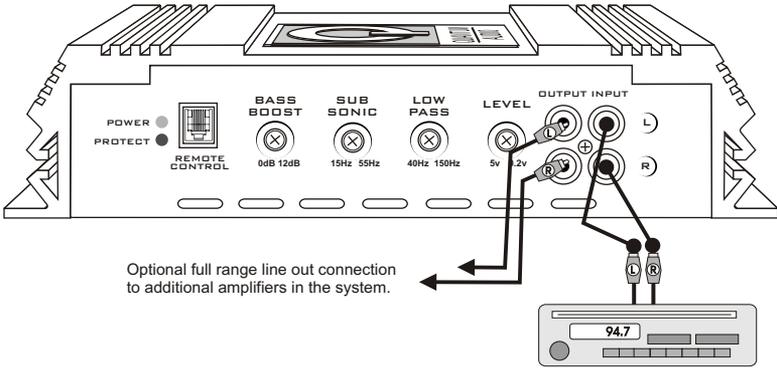
****CAUTION!** In the bridged mode, the amplifier must see a 4 Ohm load or higher. Any lower than 4 Ohms will cause the amplifier to overheat and possibly cause permanent damage to the amplifier!

QS4150 & QS4250 CONNECTIONS (2 CHANNEL MODE)



****CAUTION!** In the bridged mode, the amplifier must see a 4 Ohm load or higher. Any lower than 4 Ohms will cause the amplifier to overheat and possibly cause permanent damage to the amplifier!

QS1500D CONNECTIONS

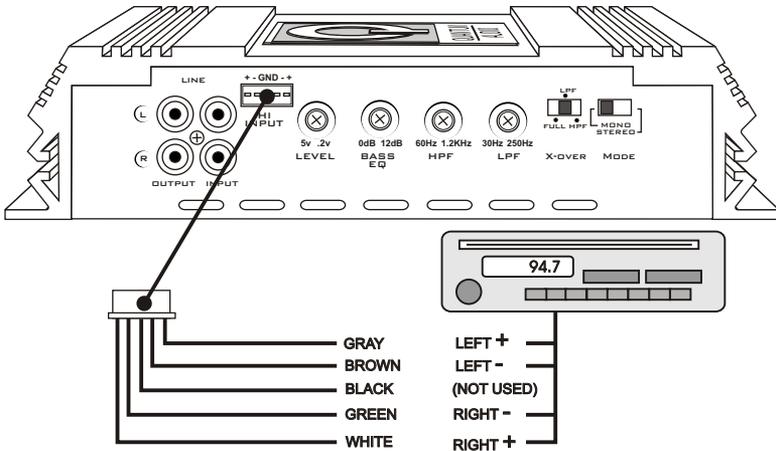


HIGH LEVEL CONNECTIONS (OPTIONAL)

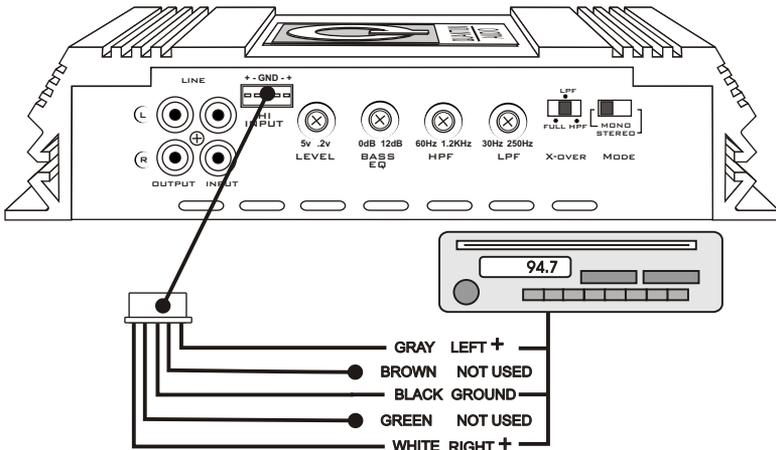
High Level inputs have been included to connect the amplifier to a radio without low-level outputs (i.e. factory radio). This connection will allow you to connect directly to the speaker output of the radio with out the need of an external adapter.

Determine the type of radio you have and make one of the following connections.

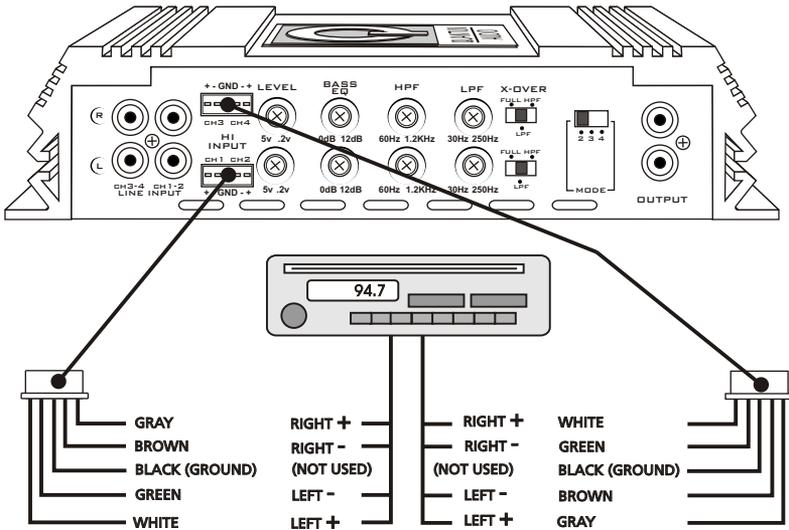
CAUTION! Before making any connections determine the type of radio to avoid possible damage to amplifier and/or radio.



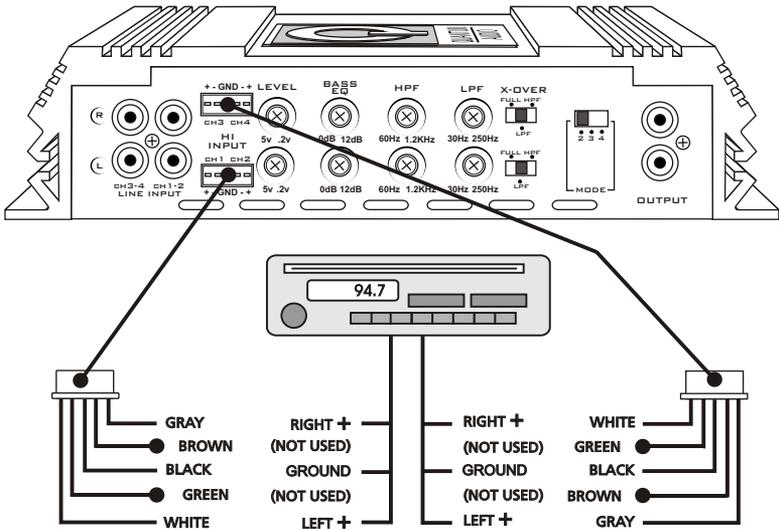
TWO CHANNEL CONNECTIONS:
FLOATING GROUND RADIO (MOST COMMON TYPE)



TWO CHANNEL CONNECTIONS:
COMMON GROUND RADIO



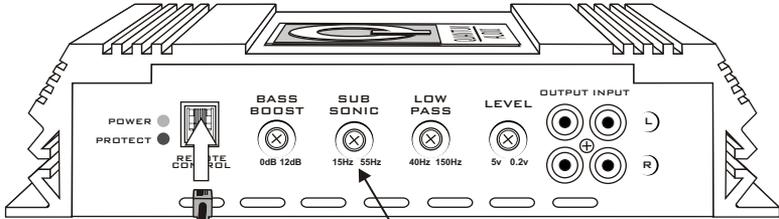
FOUR CHANNEL CONNECTIONS:
FLOATING GROUND RADIO (MOST COMMON TYPE)



FOUR CHANNEL CONNECTIONS:
COMMON GROUND RADIO (MOST COMMON TYPE)

REMOTE BASS CONTROL MODULE (QS1500D)

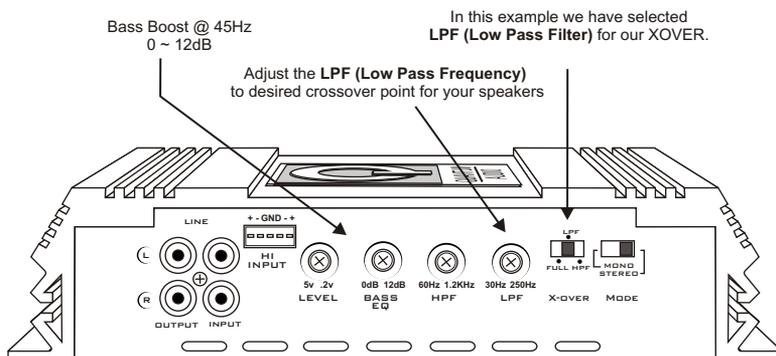
Before connecting the remote, it will be necessary to find a mounting location that will be easy to access for adjustment. Once you select your mounting location, you will need to run the control wire from the remote to the amplifier. To avoid possibility of induced noise from the car's electrical system (i.e. popping noises or engine noise), run the cable from the remote to the amplifier away from the car's electrical wiring.



Subsonic Filter - On the QS1500D a subsonic filter has been provided to filter out unwanted subsonic bass frequencies below the audible range of the subwoofer . This feature helps to improve the amplifiers overall performance since power is not wasted reproducing frequencies beyond the speakers operating range. This feature works in conjunction with the Low-pass crossover to provide band-pass filtering.

ADJUSTING THE CROSSOVER AND BASS

The SOLAR series amplifiers are equipped with a built-in variable crossover network allowing you to select the crossover type (i.e. Low-Pass or High-Pass) and the desired crossover point. For example if you wish to drive a pair of subwoofers, you can select the "Low Pass" setting on the amplifier to filter out high frequencies. This will send only low frequencies to your subwoofers (see example settings below). The crossover point should be determined by the speakers operating range. Please refer to speaker manufactures recommended crossover point.



FINE TUNE THE SYSTEM

Fine tune the amplifier's input sensitivity.



The input gain sensitivity control for the "Solar Series" amplifier is located on the side panel. This gain control has been included to allow adjustment to properly match the output of the radio. This is one of the most misunderstood adjustments. By rotating the control in the clockwise direction, the amplifier's input will become more sensitive and the music will play louder. This

is not a volume control and you will not get more power out of the amplifier in the maximum position! It may seem to deliver more output, but actually the system is only playing louder faster as you turn the volume control on the radio. Ideally, to properly level match the system the goal is to achieve maximum output from the amplifier without distortion at about 3/4 of the volume control.

To determine if the amplifier's gain is set properly, turn the system on and slowly increase the volume control. You should be able to use about 3/4 volume before the system gets loud but not distorting. It is very important when making these adjustments that you do not over drive the speakers (at point of distortion) this will cause permanent damage to the speakers. If you are unable to achieve 3/4 volume before distortion you will need to adjust gain control (in this case you would reduce the gain). The gain controls should be adjusted very slowly. It may help to have another person to assist you by adjusting the gain controls while you listen for distortion.

TROUBLE SHOOTING THE SYSTEM

We have put together this trouble-shooting guide if you experience problems after installing the amplifier. Please keep in mind that the majority of problems incurred are caused by improper installation and not the equipment itself. In addition, there are many components in the system that could cause various signal problems such as inducted electrical noise and engine noise.

Before you can properly address the problem, you must first find the component that is causing the problem. This will take patience and a process of elimination.

LOOK FOR....	SOLUTION
No Output	
Blown fuse	Replace
Bad RCA Cable(s)	Replace
+12V at power terminal	Check connection
+12V at remote terminal	Check connection
Grounding point clean and tight	Check for ground w/meter
Head Unit's fader not in center position	Set to center position
Low Output	
Check level adjustments	Re-adjust
Bad RCA cable(s)	Replace
Improper level matching	Re-adjust
Engine Noise	
Grounding points are clean and tight	Check for ground w/meter
Ground all components at same point	Ground at same point
Try different grounding point	Change for better ground
Bad RCA cable(s)	Replace
Use High Quality shielded RCA cables	Rejects inducted noise
Low Vehicle charging system and/or battery	Fix and/or replace
Red Protection L.E.D. Illuminated	
Speaker short	Check speakers connection for short circuit
Speaker grounding out	Make sure speaker wires do not touch chassis ground
Impedance too low	Check speaker impedance (Min 2 ohm Stereo, 4 Mono)
Overheating	Check mounting location for Adequate air Circulation Speaker impedance too low

SPECIFICATIONS

	QS2150	QS2250	QS4150
Dynamic Power	400W	800W	800W
Output Power @ 14.4 VDC :			
4 ohm	2 x 150W	2 x 250W	4 x 150W
2 ohm	2 x 200W	2 x 400W	4 x 200W
Bridged 4 ohm	1 x 400W	1 x 800W	2 x 400W
Frequency Response	20Hz-28KHz	20Hz-28KHz	20Hz-28KHz
S/N Ratio (A-weight)	>95dB	>95dB	>95dB
THD with 80k filter	<0.05%	<0.05%	<0.05%
Low Input Level	200mV-5V	200mV-5V	200mV-5V
Battery Voltage Range	11VDC-14.4VDC	11VDC-14.4VDC	11VDC-14.4VDC
Crossover Type	HPF/FULL/LPF	HPF/FULL/LPF	HPF/FULL/LPF
Low Pass Crossover Frequency	30Hz-250Hz	30Hz-250Hz	30Hz-250Hz
High Pass Crossover Frequency	60Hz-1.2kHz	60Hz-1.2kHz	60Hz-1.2kHz
Crossover Slope	12dB/Oct	12dB/Oct	12dB/Oct
Bass EQ	0-12dB@45Hz	0-12dB@45Hz	0-12dB@45Hz
Subsonic Filter	N/A	N/A	N/A
Amplifier Fuse & Holder	1 x 30A	2 x 30A	2 x 20A
Size (L x W x H)	$7 \frac{7}{8}'' \times 9 \frac{1}{2}'' \times 2 \frac{1}{8}''$	$12 \frac{5}{8}'' \times 9 \frac{1}{2}'' \times 2 \frac{1}{8}''$	$12 \frac{5}{8}'' \times 9 \frac{1}{2}'' \times 2 \frac{1}{8}''$
	QS4250	QS1500D	
Dynamic Power	1600W	1500W	
Output Power @ 14.4 VDC :			
4 ohm	4 x 250W	1 x 750W	
2 ohm	4 x 400W	1 x 1500W	
Bridged 4 ohm	2 x 800W	----	
Frequency Response	20Hz-28KHz	20Hz-150Hz	
S/N Ratio (A-weight)	>95dB	>95dB	
THD with 80k filter	<0.05%	<0.05%	
Low Input Level	200mV-5V	200mV-5V	
Battery Voltage Range	11VDC-14.4VDC	11VDC-14.4VDC	
Crossover Type	HPF/FULL/LPF	LP	
Low Pass Crossover Frequency	30Hz-250Hz	40Hz-150Hz	
High Pass Crossover Frequency	60Hz-1.2kHz	----	
Crossover Slope	12dB/Oct	12dB/Oct	
Bass EQ	0-12dB@45Hz	0-12dB@45Hz	
Subsonic Filter	N/A	15Hz-55Hz	
Amplifier Fuse & Holder	2 x 30A	4 x 25A	
Size (L x W x H)	$15 \frac{3}{4}'' \times 9 \frac{1}{2}'' \times 2 \frac{1}{8}''$	$15 \frac{7}{8}'' \times 9 \frac{1}{2}'' \times 2 \frac{1}{8}''$	

Due to continuing product improvement, specifications subject to change without notice.



LIMITED WARRANTY

Quantum Audio warrants any products purchased in the U.S.A. from an authorized Quantum Audio dealer. All products are warranted to be free from defects in material and workmanship under normal use and service for a period of one (1) year. This warranty applies to the original purchase only.

Quantum Audio will either repair or replace (as its option) any unit that has been found to be defective and under warranty provided the defect occurs within the one (1) year warranty period.

This limited warranty does not extent to units that have been subjected to misuse, abuse, neglect, or accident. In Quantum Audio's judgment, products that show evidence of having been altered, modified, or serviced without Quantum Audio's authorization, will be ineligible under this warranty.

*To obtain warranty service please contact your retailer or visit our web site at **www.quantumaudio.net** for more details.*

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