XS-SQ4

OWNERS MANUAL

www.crossfirecaraudio.com

XS-SQ4 FEATURES & SPECIFICATIONS

The XS-SQ4 amplifier features the finest in audio components such as **BURR BROWN OP-AMPS, MONOLITHIC SIGNAL CAPACITORS**, and **SANKEN OUTPUT TRANSISTORS**. This result is unparalleled sonic performance in a mobile audio amplifier. The XS-SQ4 amplifier's dynamic range conveys a musical realism that transcends standard amplifier designs. With seemingly **UNLIMITED FREQUENCY RESPONSE** and smashing dynamic range, the end result is the finest sounding amplifier Crossfire has ever built, period.

CROSSOVER CLICK SETTINGS

	LPF		HPF
1	41 hz	**1**	18 hz
2	42 hz	**2**	19 hz
3	43 hz	**3**	20 hz
4	44 hz	**4**	21 hz
5	45 hz	**5**	22 hz
6	46 hz	**6**	23 hz
7	48 hz	**7**	24 hz
8	52 hz	**8**	25 hz
9	56 hz	**9**	28 hz
10	61 hz	**10**	31 hz
11	66 hz	**11**	33 hz
12	73 hz	**12**	37 hz
13	81 hz	**13**	41 hz
14	92 hz	**14**	47 hz
15	106 hz	**15**	55 hz
16	121 hz	**16**	69 hz
17	145 hz	**17**	83 hz
18	185 hz	**18**	120 hz
19	246 hz	**19**	167 hz
20	292 hz	**20**	178 hz
21	317 hz	**21**	193 hz
22	343 hz	**22**	212 hz
23	371 hz	**23**	231 hz
24	408 hz	**24**	261 hz
25	458 hz	**25**	298 hz
26	503 hz	**26**	347 hz
27	583 hz	**27**	409 hz
28	702 hz	**28**	504 hz
29	854 hz	**29**	626 hz
30	1.05 Khz	**30**	820 hz
31	1.44 Khz	**31**	1.11 Khz
32	1.65 Khz	**32**	1.25 Khz
33	1.78 Khz	**33**	1.44 Khz
34	1.98 Khz	**34**	1.60 Khz
35	2.20 Khz	**35**	1.94 Khz
36	2.48 Khz	**36**	2.24 Khz
37	2.80 Khz	**37**	2.88 Khz
38	3.19 Khz	**38**	3.77 Khz
39	3.95 Khz	**39**	3.90 Khz
40	4.12 Khz	**40**	4.10 Khz
41	4.20 Khz	**41**	4.22 Khz

RMS Power @ 12.5 VDC	XS-SQ4
Power @ 4 Ohms Stereo	175W X4
Power @ 2 Ohms Stereo	300W X4
Power @ 1 Ohms Stereo	325W X4
Bridged Power @ 4 Ohms	600W X2
Bridged Power @ 2 Ohms	650W X2
Min. Speaker Impedance	1 Ohm Stereo
Total Harmonic Distortion	<0.01%
Damping Factor	>200
Typical Efficiency	65%
Frequency Response	10Hz - 50kHz
Input Sensitivity	6V - 0.2V (+/- 5%)
Signal-to-Noise Ratio	>110dB
4-Way Protection Circuit	DC Offset,Thermal, Low / Over Voltage
Crossover Network	
Low-Pass Crossover	40Hz - 4kHz
High-Pass Crossover	20Hz - 4kHz
Operating Voltage	10V - 18V
Fuse Rating	120A (External)
Heat Sink Size L X W X H	23.62" X 11.33" X 2.58"

FEATURES

· Class A/B Topology
· Burr Brown Operational Amplifiers
· Monolithic Signal Capacitors
· Sanken Output Devices
· Overbuilt Dual Unregulated Power Supplies
· Hand Wound Power Supply Transformers
· 24 dB / Octave, Variable High / Low-Pass Crossover
· Isolated Pre-Amp Section
· Crossovers Have 41 Detents For Exact Frequency Selection
· Aluminum Shaft Potentiometers
· Panel Mounted Tiffany RCAs
· Clip Indicators
· Proprietary Extruded Aluminum Heatsink
· Remote Level Controller Included
· Working Voltage From 10V ~ 18V

POWER - GROUND - REMOTE

The XS-SQ4 operates within 10 volts to 18 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
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 "**RCA INPUTS**" section 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.

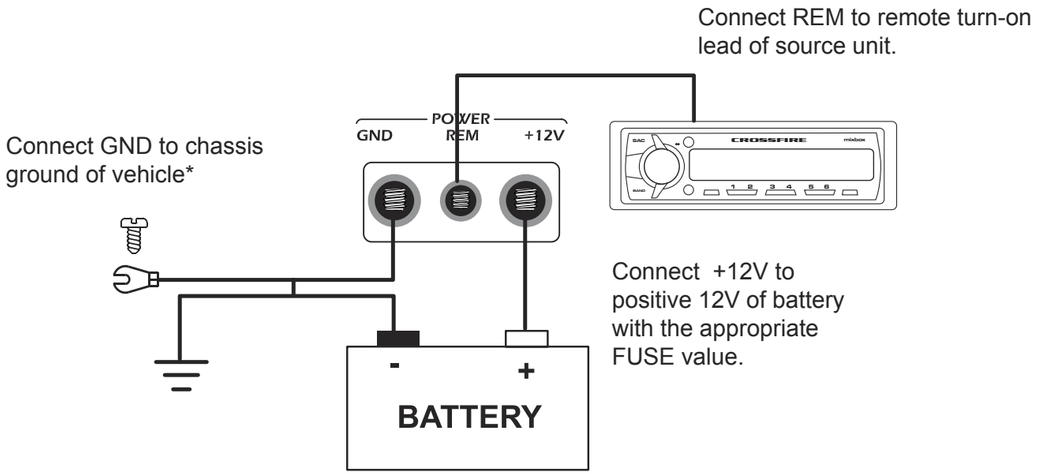
GROUND
The wire used for ground should be of the same gauge as the power wire. Make sure to choose a different color (generally black) so that you do not reverse the polarity at the amplifier terminals. Follow the rules below for connecting the ground wire properly:
1. Avoid using seat bolts, seatbelt 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 heat shrink the connection. If possible run this wire along side of the power wire using the same precautions.

POWER - GROUND - REMOTE WIRING DIAGRAM



RCA 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.

LOW 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. Always make sure to position your signal cables away from the power wire, preferably on the opposite side of the vehicle or at least 18" apart. When routing 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.

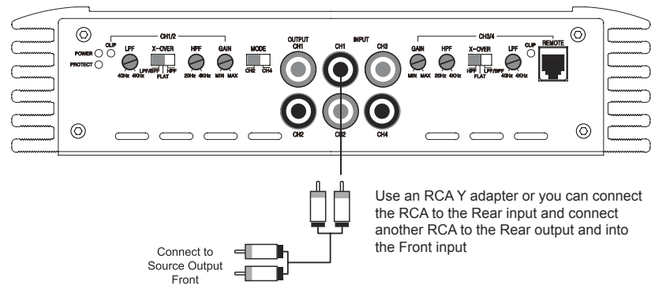
LEVEL CONTROL
Next to the preamp inputs on the side panel of the amplifier is the level control, commonly referred to as the gain. The gain allows you to match the output level of your source unit or signal processor to the input level of the amplifier. Matching the input can be accomplished in three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

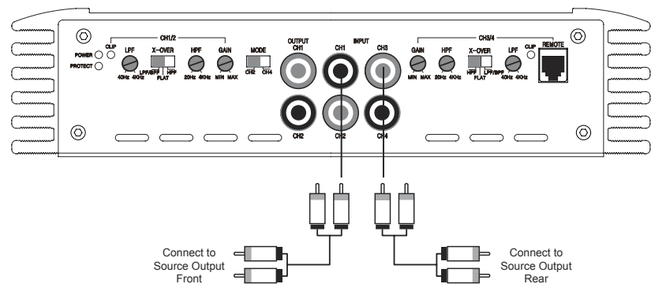
REMEMBER: The gain control is not a volume knob. Ignoring the three steps above may leave you with damaged speakers and possibly damaged amplifier(s).

RCA SIGNAL & WIRING CONFIGURATIONS

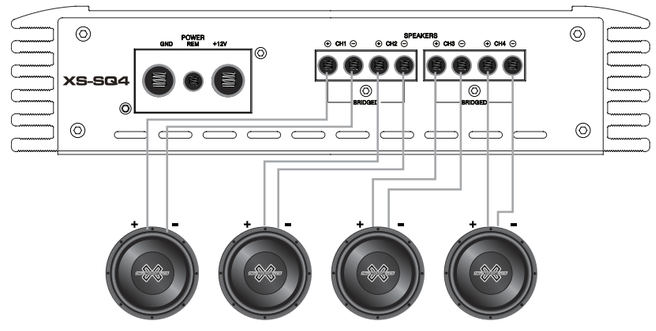
4 CH. WITH (1) RCA INPUT CONFIGURATION



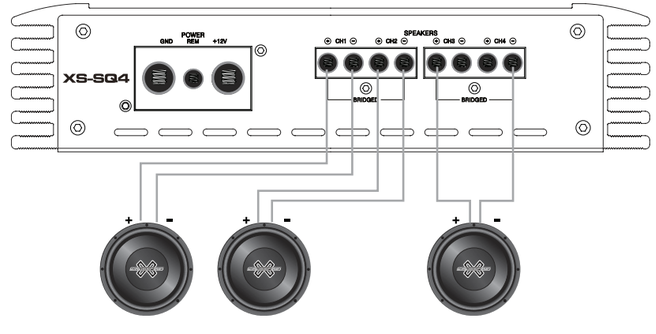
4 CH. WITH (2) RCA INPUTS CONFIGURATION



4 CH. OPERATING (STEREO)



3 CH. OPERATING (STEREO & MONO)



XS-SQ4 TUNING & ADJUSTMENTS

1. Install all system fuses.
2. Set the amplifier's input sensitivity controls to their minimum positions (full counterclockwise).
3. Set all amplifier crossover switches according to your system's design.
4. Make preliminary adjustments to the crossover frequency, usually 80Hz is good starting point for high and low pass. It may be necessary to fine tune the crossover frequency later for the best overall sound quality.
5. If using a Remote Subwoofer Level Control, set it to maximum (full clockwise).
6. Turn the headunit on with the volume set to minimum.
7. Visually check the amplifier's has turned on by the power LED.
8. Check the condition of all other components to make sure they are powered up.
9. Set the headunit's tone controls, balance, and fader to the center (flat) position. Turn off any loudness or other signal processing features.
10. Set the volume control of the headunit for maximum undistorted output (on most headunits this will be approximately 7/8 of maximum volume). Use a very clear and dynamic recording.
11. Turn up the sensitivity or gain level control on the amplifier until the clip LEDs start to blink, or until the speakers reach maximum undistorted output.
12. Repeat sensitivity level adjustments for all other amplifiers.
13. Reduce the headunit's volume to a comfortable level.
14. Listen to various musical selections to check overall system balance. Compare front to rear, midbass to midrange, etc. If one speaker set is too loud compared to another, then its level must be lowered to blend correctly with the other speakers. Note: For subwoofers controlled by the Remote level control, keep the level setting from step 11 or 12. Use the control to blend subwoofers with the rest of the system. The correct subwoofer volume will change depending on road noise and differences in recordings.
15. Fine tune crossover frequencies to achieve the smoothest possible blending of each speaker set.
16. With all levels set correctly, the system will reach overall maximum undistorted output at the volume level set in step 10.

TROUBLESHOOTING

No power: Check voltage at the amplifier with a DMM (volt meter), +12V and REM (with head unit on) the voltage should register between 12V and 14.5V when using the attached ground lead of the amplifier. Check fuse at the battery. Use a meter to verify connection from one end of the fuse to the other, breaks may not always be visible. If the fuse is blown, check the power wire and also the amplifier for a short. If the short is in the amplifier itself, see your Crossfire dealer. If no short is present, replace the fuse. Power without sound: Turn the amplifier off and check all input and output signal cables and power connections. Check the speakers for shorts with a DMM (volt meter) or by connecting them to another audio source. After making sure everything is correct, turn the amplifier on again

Power without sound and the PROTECT LED is lit: The red PROTECT LED lights when the amplifier shuts down for either thermal or over-current protection. A high internal amplifier operating temperature will trigger thermal shutdown: after it cools about 5°C, the amplifier will restart. A shorted speaker lead or operation into unusually low impedance loads will trigger over-current shutdown: cycle power at the amplifier REM terminal to restore operation. Check for shorted speaker wiring or damaged speakers or crossover systems if over-current shutdown occurs.

No sound from one or more channels: Check for overvoltage on +12V and ground terminals. Check the balance control in the head unit. Check speaker connections. Check signal input connection. Very low output: Check your head unit's fader control or the amplifier's input sensitivity level.

Frequent amplifier shutdown with automatic recovery: This indicates chronic amplifier thermal shutdown because of operation at consistently high internal temperatures. High operating temperature can be caused by inadequate ventilation. Make sure you are not running a lower than recommend impedance. Also check for damaged speakers or passive crossover systems. Finally, chronic thermal shutdown may result from otherwise normal operation of the amplifier at elevated output power levels, which can be resolved by providing additional amplifier cooling, such as an external fan, or reducing amplifier output level. Its critical that the SQ4 amplifier have the proper power and ground wiring from the vehicle's electrical system. Too small of power wire or improper terminations can cause voltage drops and the amplifier to engage its protection.

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 and speakers are warranted to be free from defects in materials and workmanship under normal use and service for a period of (1) year when the unit is installed by an authorized Crossfire dealer. Non-authorized dealer installed products carry a (90) days parts and labor limited warranty. The extent and conditions of Crossfire's limited warranty are as follows:

i. Crossfire will either repair or replace (as 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 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 (90) days of the date of purchase when the unit is installed by a non-authorized Crossfire dealer. This (90) days warranty includes both parts and labor and applies to the original purchaser only.

iii. This warranty will be void to 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 will be returned to the 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 or intended.

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 charge 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 us at (972) 570-0800 or fax in your name, address, telephone number and the model number of the item(s) to be returned to receive a Return Authorization Number to (972) 570-2200. Your return authorization number must be clearly written on the outside of the packing box returned to Crossfire. All returned products must be accompanied with a dated proof of purchase invoice or the product may be subject to costs of parts and labor. Return the unit 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

PERSONAL RECORDS / CONTACT INFORMATION

For your records, Crossfire recommends keeping the model and serial number of your new Crossfire amplifier. This could possibly help you recover your amplifier in the event of theft. Use the following spaces to do so and make sure to keep your manual in a safe and dry place.

Model: _____

Serial Number: _____

Date of Purchase: _____

Place of Purchase: _____

Notes: _____

_____

_____

E-mail Contacts:

tech@crossfirecaraudio.com (technical support)

Address and Phone numbers:

3247 Story Rd. West, Irving, TX 75038

PH: (972) 570-0800 FX: (972) 570-2200

www.crossfirecaraudio.com

Thank You for choosing Crossfire! Enjoy the music!