

XR-222 / XR-888 / XR-999 / XR-1000

XR - series Multi - Channel MOSFET Power Amplifier

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Message from BM Audio Labs.

Thank you for choosing BOSCHMANN® Car Audio. You have chosen the right equipment in your mission to attain the highest performance for your car audio system. Maintain your power amplifier properly and it will ensure you years of uncompromising musical enjoyment. This model is designed to suit any automotive makes and to work in as many different environments as possible.



The XR-series power amplifier is designed by highly qualified mobile acoustic professionals using the finest and most durable high - end components in the industry. Before proceeding with installation, we recommend that you read through this manual to command a better and more accurate understanding of the XR-222 / XR-888 / XR-999 / XR-1000 in order to derive the most out of this high performance power amplifier.

Original product:

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You are welcome to write to us with any questions pertaining to this product at our customer service at inquiry@bmaudiolabs.com. Write to us with as much information as possible. Keep your purchase receipt or invoice as proof of purchase and register your product immediately after opening. Do not support piracy as it directly inhibits the research and development of better and more cost - efficient audio entertainment for you and your next generation.

Features

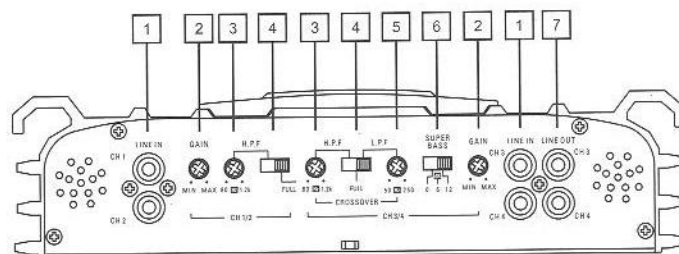
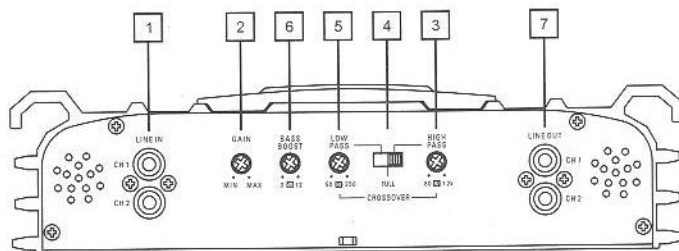
- Four Class "AB" High-Current Dual Discrete Drive Stages.
- Class "AB" Technology MOSFET PWM Power Supply.
- Bridgeable & TRI-Mode Operation.
- Continuously Variable 24dB/Octave High Pass & 24dB/Octave Low Pass Crossover.
- Enhanced Bass Boost +12dB @ 50Hz.
- Gold Plated RCA Input & Output
- Soft Start & Muting.
- Overload, Thermal, Short Circuit Protection.
- Power & Protection indicator.

A Boschmann - Meyer Research Division.

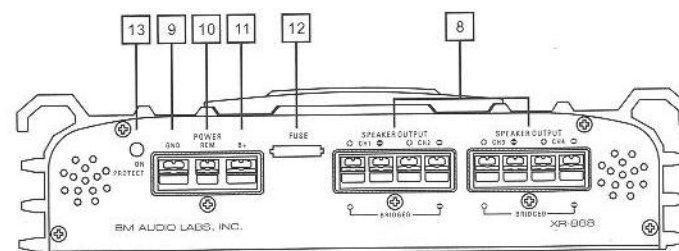
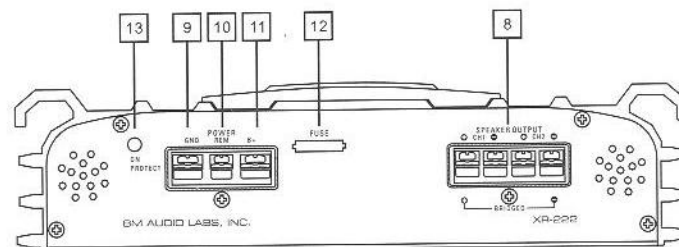
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FUNCTION DIAGRAM

FRONT



REAR



FUNCTIONS

1. RCA Low Level Inputs Jacks

This allows left and right input to be connected to the amplifier using RCA plugs.

2. Gain Control

Allows for the adjustment of the gain of both channels to match the output level of the source. In addition, it allows for detailed adjustment with L&R level control to be separated.

3. High Pass Filter Control.

Variable High Pass Filter (80-1.2kHz) : For use as a dedicated mid high range channel, set filter switch to " HPF ". The input circuit filters out all frequencies below 80Hz to 1.2kHz.

4. Crossover Control.

Adjust the crossover for your chosen installation method.

- LOW : Low pass filter-only bass tones (50-250Hz) go to speakers. Use with woofer or subwoofer.
- FLAT : no filter-all tones go to speakers. Use with full-range speakers, or with external crossovers.
- HIGH : High pass filter-blocks very low tones (80-1.2kHz) from the speakers.

5. Low Pass Filter Control.

Variable Low Pass Filter (50-250Hz) : For use as a dedicated subwoofer channel, set filter switch to "LPF ". Adjust variable crossover frequency with control as desired. The amplifier input circuit filters out everything above 50Hz to 250Hz (dependent on the adjustment of the frequency control), so only the deepest bass notes are amplified.

6. Super Bass Control.

By using the Bass Boost function, bass notes at 45Hz are emphasized as much as 18dB.

7. RCA Line Output Jacks

Full range out from channel L&R inputs is provided at Line Out jacks.

8. Speaker Terminal

It allows the connection of speakers to the amplifier.

9. Ground Connection

Connects ground wire from a suitable ground point on the chassis.

10. Remote Connection

Connects the control wire which allows the amplifier to be turned on and off by the head unit.

11. Power Connection

Connects +12V DC power wire from the battery.

12. Fuse

It protects both the amplifier and automobile electrical system from fault conditions.

13. Power LED : The will light up "GREEN" when the amplifier is powered.

Protect LED : The "RED" protect LED comes on when the amplifier diagnoses overheating or a short circuit (speaker failure)

Installation

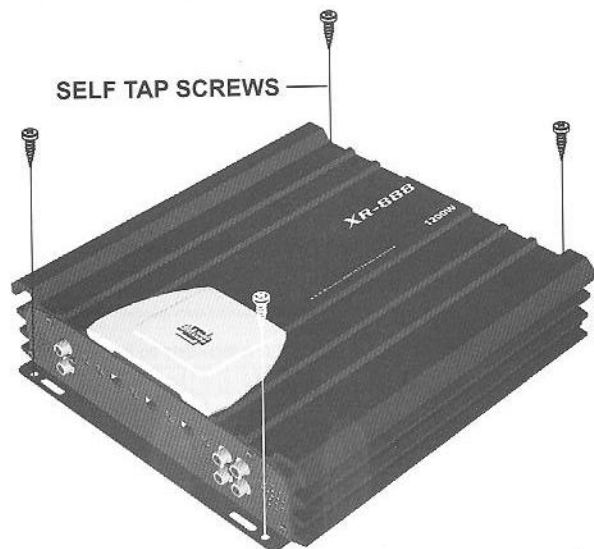
Installation

Full mounting, installation and connections for this product should only be carried out by an authorized, and professionally qualified car audio specialist. BM Audio Labs does not warrant its product which is damaged during or after installations performed by inexperienced or unqualified people. It is worthwhile to remember that this is not a common 13.8V DC power amplifier, and can be easily damaged by unfamiliar DIY attempts.

Some Notes for the installer:

- Using felt tip pen or pencil mark the four holes to be drilled for mounting.
- NEVER use the amplifier as a template for drilling. It is very easy to damage the amplifier surface in this manner.
- Mounting holes diameter should be at most 3.5mm
- If you want to mount onto MDF or wood panel, drill four 3.0mm diameter holes into mounting surface.
- It is recommended that the amplifier is mounted using only the supplied screws.

INSTALLATION DIAGRAM



Caution

CAUTION!

CONTINUOUS EXPOSURE TO HIGH SOUND PRESSURE MAY CAUSE YOU TO BECOME ACCUSTOMED TO LEVELS ABOVE THOSE NORMALLY TOLERATED. THE ADVICE GIVEN BY BM AUDIO LABS IS THAT THIS MAY HAVE A DANGEROUS EFFECT ON YOUR HEALTH, CAUSING HEARING DISORDERS OR IMMUNE SYMPTOMS. TO ENSURE SAFE USE, AVOID "OVERDOSING"



dB level	example
30	Quiet library, soft whispers
40	Living room, refrigerator, away from traffic
50	Light traffic, normal conversation, quiet office
60	Air conditioner at 20 feet, sewing machine
70	Vacuum cleaner, hair dryer, noisy restaurant
80	Average city traffic, garbage disposals, alarm clock at 2 feet

The following noises can be dangerous under constant exposure

90	Subway, motorcycle, truck traffic, lawn mower
100	Garbage truck, chain saw, pneumatic drill
120	ABM Audio labs XR-series amplifier driving 2 x ZD-12XAL subwoofer at 70% capacity.
140	Gunshot blast, jet plane
180	Rocket launching pad

Information courtesy of the Deafness Research Foundation (USA).

Precautions

Precautions: Read First!

- The negative battery terminal must be disconnected before any electrical connections are made.
- If after reading the directions you feel uncomfortable about installing the amplifier in your car, or not equipped or competent to do so, you should have the amplifier installed by an authorized installer which is always recommended.
- Be sure to choose a location that provides substantial ventilation for the amplifier. The most preferred locations would be in your car's trunk, under the front seats or on the back wall of a truck.
- The location chosen should provide at least 2" of clearance above the amplifier for adequate ventilation.
- If the amplifier is to be mounted vertically, be sure that it is in a place where adequate air will flow along the length of its heatsink fins for cooling.
- NEVER mount the amplifier up side down, this will cause the heat to rise back into the amplifier causing thermal shutdown or possible permanent damage.
- NEVER mount the amplifier in a location that is subject to direct sunlight or exposed to moisture.
- Be sure to mount the amplifier to a strong, solid surface which will not give way under the stress of a sudden stop or accident.
- Make sure that the mounting screws will not penetrate the gas tank, brake and fuel lines, wiring or other critical parts of your car when installed.
- NEVER operate the amplifier without the proper power and ground wire 10 gauge minimum.
- NEVER operate the amplifier without proper fusing. Fuse holder must be located with in 0.5 meters from the battery. This fuse is to protect the car not the electronics. In case of a short, the fuse will blow instead of the wire burning up. Using other than the recommended fuse ratings at the battery and at the amplifier may cause damage to the amplifier and will void your warranty.
- To help minimize interference, it is best to run the power cables along the opposite side of the audio(RCA) cables.
- Do not run wiring underneath or outside the car since exposure to the elements may cause the insulation to deteriorate rapidly, resulting in short-circuits and /or intermittent operation. All cables should be run beneath carpets and inside trim pieces.
- Whenever wires pass through metal, rubber or plastic grommets must be used to prevent the metal from wearing through the installation and causing a short.



Precautions

- Whenever possible, use cable ties, mounting clamps and similar wiring aids. (Available from an electrical supply or auto parts store) Adding stress relief loops to wiring is also advisable to prevent straining or breakage.
- It is best to test the system before the amplifier is mounted and interior of car is reassembled.
- The amplifier operates with any vehicle using a 12 volt negative ground system. If you are not sure of the type of electrical system in your vehicle, consult your authorized dealer or qualified mechanic.
- NEVER ground the speaker leads and NEVER allow the speaker leads to come in contact with each other. The Speaker wire should be at least 16 gauge or lower.
- If the temperature inside your car reaches extreme levels(such as by sitting locked up for several hours in the hot sun or exposed to a very cold winter's day)the amplifier may go into protection mode and shut off. Leave the unit off until the ambient temperature returns to normal.
- Do not listen to high volumes for extended periods of time or hearing damage may occur.
- Remote turn on wire must be switched by the radio. If the radio does not have a remote turn on or antenna output, connect to wire that has a positive 12 volts output when the key is turned to the accessory position. If the amplifier does not turn off the battery will die.



Use the following table to determine what size power cable you should use. Use the same thickness for the ground wire. Keep the ground wire length to 0.5m or less. Any more could introduce noise into the system.

Length Current	Gauge of Power / Ground Cable							
	0 - 1.5	1.5 - 2.5	2.5 - 3.5	3.5 - 4.5	4.5 - 5.5	5.5 - 6.5	6.5 - 7.5	7.5 - 9.5
0 - 20A	14	12	12	10	10	8	8	8
20 - 35A	12	10	8	8	6	6	6	4
35 - 50A	10	8	8	6	6	4	4	4
50 - 65A	8	8	6	4	4	4	4	2
65 - 85A	6	6	4	4	2	2	2	0
85 - 105A	6	6	4	2	2	2	2	0
105 - 125A	4	4	4	2	2	0	0	0
125 - 150A	2	2	2	2	0	0	0	00

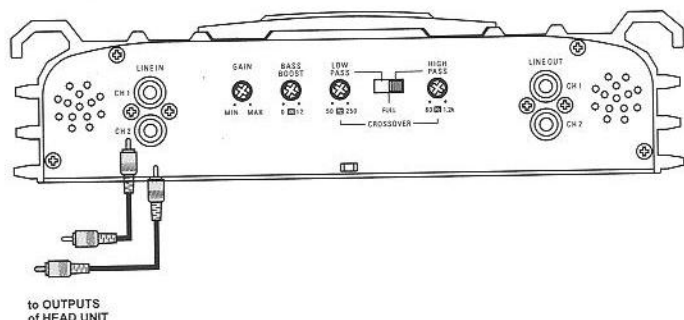
Table-1: Bm Audio Labs Recommended American Wire Gauge Standard Units.

Amplifier Input Connections

This amplifier will accept low level input. Low level is the same as line level or pre - amp level. Low level signal is carried through RCA cables. It is advisable to use low level inputs to the amplifier if the head unit is equipped with the low level outputs. The preferred choice of RCA cables should have at least a double - shielded OFC core high quality interconnect. BM Audio Laboratories tri - shield Gold series coaxial RCA interconnects (RCA - 5.2G, BPW - 800SKT) provide the basic standard for all BM amplifiers. Connect low level / line interconnect RCA cables from head unit, or other signal processor, to the line level input on the amplifier. See Fig.2 system wiring diagrams.

AMPLIFIER SYSTEM WIRING DIAGRAM

TWO CHANNEL SIGNAL CONNECTIONS (XR-222) (HEAD UNIT WITH FRONT AND REAR OUTPUTS)



FOUR CHANNEL SIGNAL CONNECTIONS (XR-888 / XR-999 / XR-1000) (HEAD UNIT WITH FRONT AND REAR OUTPUTS)

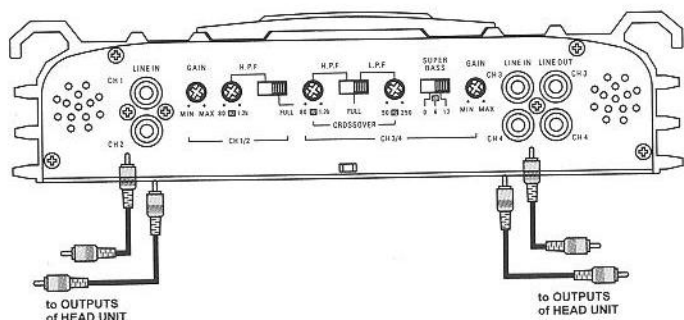


Fig. 2

Power Connections

It is important to have good quality power and ground connections. Remember, to complete an electrical circuit, the ground connection is just as important as the positive power connection. Before any power connections are made, disconnect the ground cable at the battery.

When the power supply lead, memory backup lead or ground lead are extended use a 5mm² (AWG5) or larger automotive grade cable which will withstand friction and heat to safeguard against fires occurring as a result of short-circuiting.

GND - Connect the proper gauge ground wire to the amplifier "GND" terminal. Locate the position on the chassis of the car to which the amplifier is to be grounded. The surface must be free from any paint or dirt. This can be accomplished with a small grinding bit, bit or wire wheel.

NOTE: Do not ground the amplifier to the "frame of the car. The frame on most cars and trucks is not grounded to the chassis (body). Solder or a clamp ring to connect the ground wire. Pretrial the Prepped chassis to bolt the ground ring terminal with nut, bolt and lock washers. Insulate metal and connector with paint or silicon to prevent rust and oxidation. BM Audio silicon also works great to prevent nuts and bolts from working loose in a harsh environment of an automobile. Upon completion of the ground connection, grab wire or connector and confirm that it is a solid connection. To prevent engine noise, it is recommended to ground the head unit and other audio electronics in the same location.

Remote Turn - on - Connect the remote wire to "REMOTE" terminal of amplifier and to remote/antenna turn - on output or "remote amplifier" of head unit. If head unit is not equipped with a remote/antenna output, locate a wire that is controlled by the accessory position of the key. It is important to have the amplifier turn off with the radio or key. If the amplifier remains on, the result will most likely be a dead battery.

Positive - Connect the proper gauge power wire to the amplifier "B+" terminal of amplifier. Run wire towards the fuse holder that is no greater than 0.5 meters from the battery. Remember: the fuse is to protect the safety of the car in case of a short. Connect fuse holder to battery, however, do not install fuse at this time.

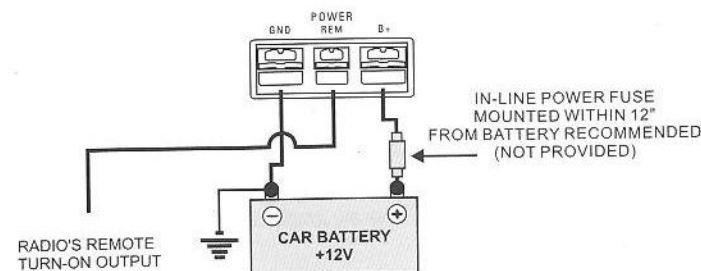


Fig. 3

LOUDSPEAKER CONNECTIONS

The XR-series amplifier car operates from one, two, three, four to six channel mode depending on your model. The minimum impedance for single channel (bridged/mono) operation is 4 - 8 ohms (1 channel mode is not advised on 4 / 5 / 6 - channel models). Tri - mode is referred to stereo and mono at the same time. Minimum impedance remains the same for three channel (satellite / subwoofer) systems as long as proper passive crossovers are used.

Connect right and left speaker wire to corresponding speaker output terminals of the amplifier. Be sure to have the positive wire from the speaker to the positive speaker terminal of the amplifier and the negative wire from the speaker must connect with the negative speaker terminal of the amplifier. Reversing any of these connections will result in the speaker cones moving out of phase which causes bass cancellation.

SPEAKER CONNECTION DIAGRAM

TWO CHANNEL SPEAKER CONNECTIONS (XR-222)

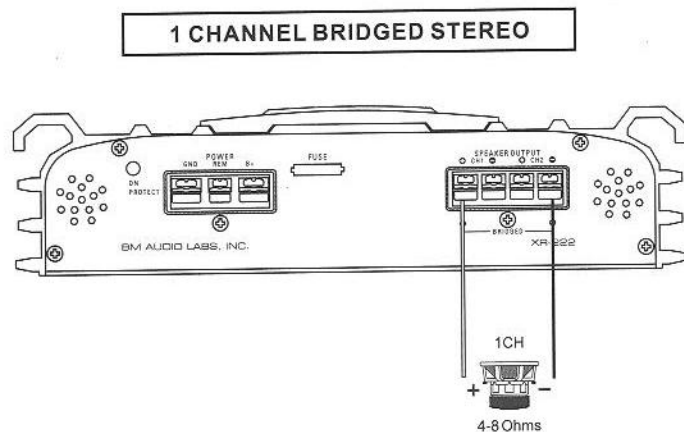


Fig. 4

Caution: $\frac{\text{Nominal Speaker Impedance}}{2} \geq \text{Minimum amplifier total stable operation equivalent load impedance}$

Attempting to use an amplifier at an unstable load will damage the amplifier. Observe speaker nominal impedance and do not operate amplifier at below stable equivalent load.

SPEAKER CONNECTION DIAGRAM

TWO CHANNEL SPEAKER CONNECTIONS (XR-222)

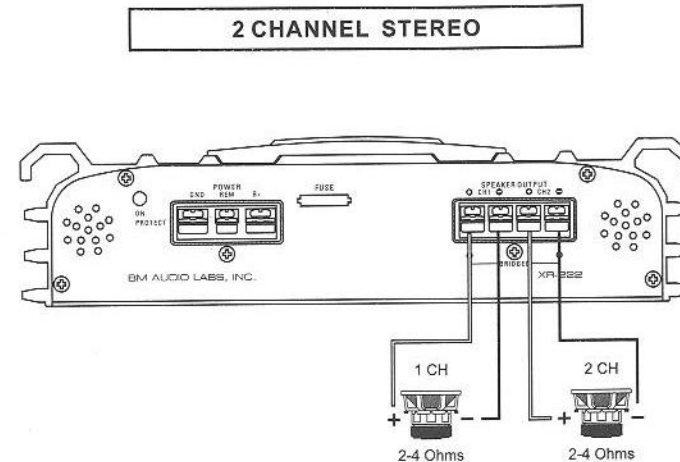


Fig. 5

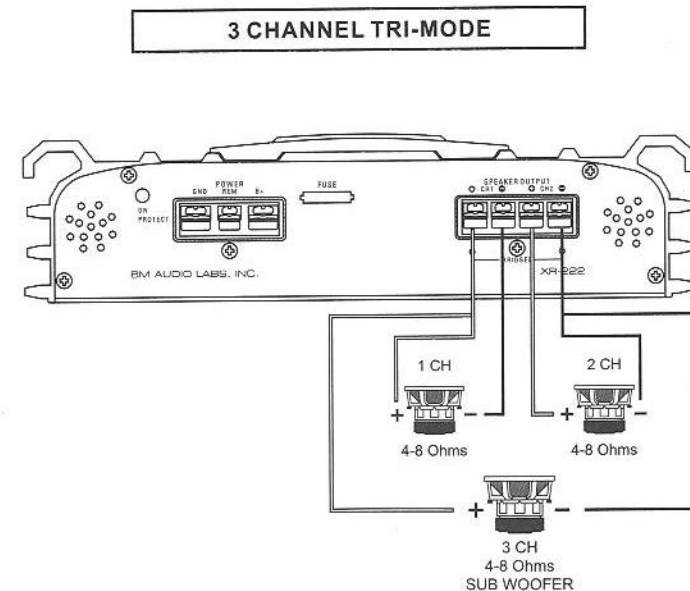


Fig. 6