
X2 650.1

X2 1100.1

X2 2500.1

CLASS D MONOBLOCK AMPLIFIER

OWNER'S MANUAL

Table of Contents

Topic	Page
Introduction	2
Finding a Suitable Location	2
Supplying Power	2
The Ground Connection	2
Running Cables	2
Class D Amplifier Recommendations	3
Diagnostic Fault Codes	3
Speaker Level Input Pigtails	3
Input Section	4
Gain / Sensitivity Controls	4
Crossover Controls	4
Crossover Function Controls	4
Subsonic Control	4
Phase Control	5
Bass Boost and Frequency Control	5
Input Source Select Switch	5
Slave Connections	5
Remote Level Control	5
Load Impedance	6
Speaker Output Connections	6
Power, Ground and Turn-On Connections	6
Fuses	7
Auto-Sense Turn-On Detection	7
Accessing Controls and Mounting Provisions	7
Installation Instructions	8
Master/Slave Wiring Configuration	9
Subwoofer Wiring Options	10
Warranty	10
X2 650.1 / X2 1100.1 / X2 2500.1 Specifications	11

Thank you for purchasing an ARC Audio High-Performance Amplifier!

This ARC Audio amplifier uses a Full Range Class D architecture that significantly improves efficiency, lowers heat generation and reduces current consumption. Don't be fooled by the small size. Class D amplifiers make more power per square inch than traditional designs. This compact size makes installation a breeze without compromising storage space.

ARC Audio...**SOLID CONSTRUCTION for SOUND Car Audio Systems.**

Warning!!

We build all ARC Audio products to play at high volumes for extended periods of time. Your ears however are not designed for extended listening at high volume levels. This product can easily generate volume levels that can permanently damage your hearing. We urge you to limit your exposure to very high volume sound.

You may also find your state has laws governing the volume of an audio system in a car. Please be aware of all local and state laws in your area.

A properly tuned and operated audio system will deliver years of enjoyment when used properly.

Installation Instructions

ARC Audio X2 Amplifiers are designed for easy installation in your vehicle. To ensure the proper operation of your new purchase, please follow the suggestions we have listed below:

Warning

Please check the suitability of the installation location before you begin. Do not cut any of the car's structure. Pay close attention to what is behind the panels or carpet. Often, vehicle manufacturers will hide wires, fluid lines, computers or other electronic devices in the exact area you want to mount and amplifier or drill a hole to run a wire.

If you do not have experience with automotive electrical and mechanical systems contact a professional installer. Paying for a qualified installer is almost always cheaper than paying a dealership to repair your car.

Locating the Amplifier

The amplifiers must be securely mounted to a solid surface. Please select a dry location in the trunk or passenger compartment only. Do not mount the amplifier to any area that may experience excessive vibration (like side of a subwoofer enclosure). Position the amplifier in an area that receives sufficient airflow for proper cooling.

Supplying Enough Power - The Laws of Physics

Your amplifier Does NOT make power. It converts power, from your vehicles electrical system and turns it into high-power musical energy. If the amp can't get the power it needs from your alternator and battery, it will not be able to produce its full output. Your ARC Audio amplifier will produce full output for longer than other amps on the market today. If the Voltage or Current drops too low, even our amplifiers will drop below their rated output. Make sure your vehicle charging system is in good working order. Any high-performance audio amplifier will increase the demand on your alternator and battery. If you are unsure of the condition of electrical system, have your charging system tested by a professional technician.

The Ground Connection!!! Warning: Read this Carefully

The ground connection is as important as the power connection in terms of supplying power to your amplifier. If you are working on a late-model vehicle, it may be necessary to ground your amplifier directly to the chassis of the vehicle AND run a parallel ground wire to the negative terminal of your battery. Modern vehicles make extensive use of adhesives to join panels together. These adhesives don't conduct electricity.

When connecting the ground wire to the chassis, find a clear and safe location close to the amplifier, and remove all the paint and sound deadening. Use a large nut and bolt to secure the ground wire. Never use seat belt bolts for grounding.

Remember, the ground must carry the same high current as the positive power wire.

To reduce the risk of noise, run all signal cables away from any vehicle or power supply wiring.

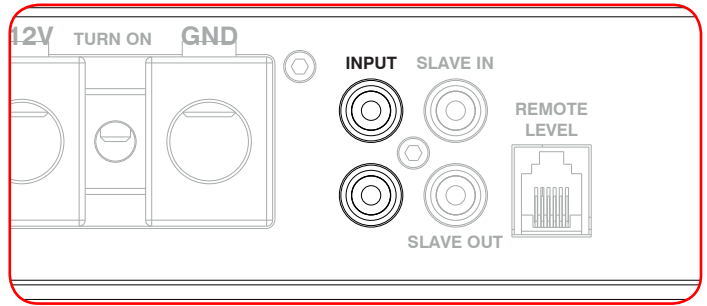
Running the Cables

Take care when running the power and signal cables through the passenger compartment of the vehicle. Running power down one side and signal down the other is the preferred method. If this isn't possible, keep them as far apart as possible. When running through any metal, always use a rubber or plastic grommet to prevent the power wire from shorting and to reduce the risk of fire. A 4 AWG or larger wire should be used for power and ground connections.

ALWAYS install a fuse on the power wire as close to the positive battery terminal as possible - preferably within 6 inches.

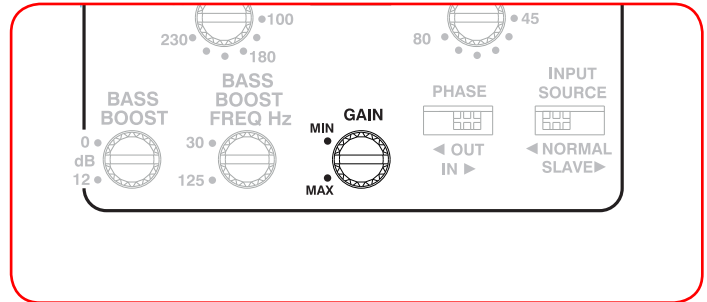
Input Section

X2 Series Monoblock amplifiers are equipped with balanced differential input stages that are compatible with any analogue source including Balanced and Unbalanced RCA, Common ground speaker level output and Bridged Tied Load (BTL) outputs common to many OEM head units. The RCA pigtailed included with these amplifiers are intended to be used with the speaker-level outputs of a radio or amplifier. These pigtailed include a divider network molded into the RCA end that reduces the voltage of the signal from the source. If you are integrating into an OEM system with balanced or common ground line-level signals you should not use these Pigtailed. In this case it is recommended that you use an appropriate RCA cable with one set of ends removed as inputs for the amplifier.



Gain / Sensitivity Controls

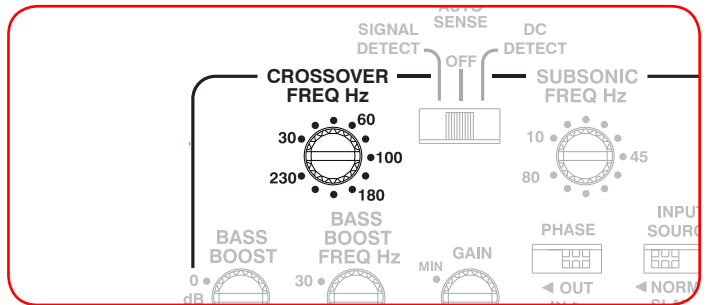
Because of the wide range of head unit output configurations available, all ARC Audio amplifiers have an adjustable input sensitivity or "Gain" control. The gain is not a volume or a power limiting control like a throttle. It makes the amp more sensitive to input from the source. With the gain up the amp will reach full output at a lower volume setting on the deck and becomes more sensitive to noise from the car's electrical system. Try to run the gain at the lowest setting possible for your system.



There is no correct gain setting. As different size and shape speakers require different amounts of power to reach the same output, the gain settings need to be adjusted to compensate for these speaker efficiency differences. If you tried to set all the gains at half way you would probably find the system didn't sound very good. Use good judgment and optimize each channel carefully as you configure the system. You want to set the gains to maximize the output of the amplifier, while producing minimal distortion for your given source unit and music selection.

Crossover Control

A crossover is a circuit that limits what frequencies are produced by the amplifier, and subsequently, the speaker(s) connected to the amp. A tweeter can be destroyed by bass information. Those frequencies need to be filtered for proper operation. Likewise, a subwoofer will not sound natural if it is playing midrange frequencies. A crossover removes these sounds from the signal going to the speaker. As you might guess, careful adjustment is required to ensure that all the speakers are playing in the correct frequency range and that the net frequency response of the total system is smooth with no over- or under-lap.

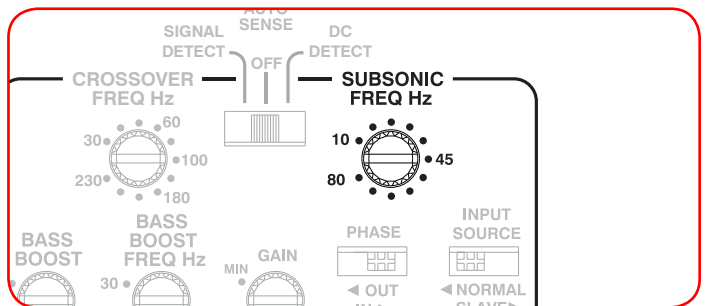


The X2 Series Monoblock amplifiers include Low-Pass crossover that is adjustable from 30Hz to 230Hz.

Subsonic Control

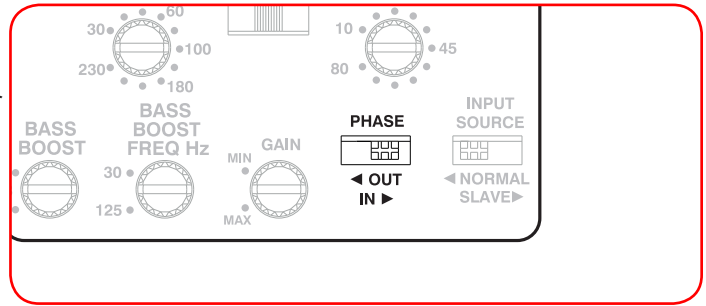
Functioning in a similar fashion to the Low-Pass crossover found on all X2 Series monoblock amplifiers, all three amplifiers include an adjustable high-pass filter that can be used to block infrasonic frequencies from being passed through to your subwoofers.

Given the power available from the X2 Series Monoblock amplifiers, it is advisable to configure the Subsonic filter to protect your subwoofers from over-exursion when used in bass-reflex (ported) subwoofer enclosures.



Phase Control

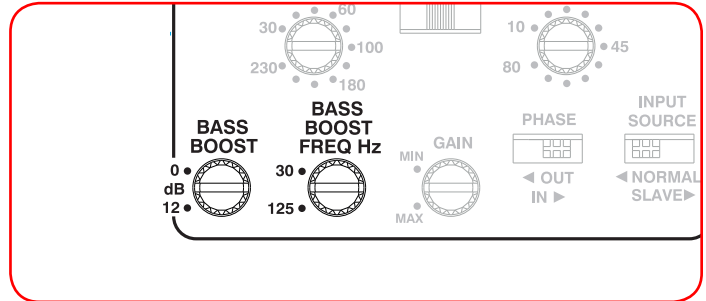
All three X2 Series Monoblock amplifiers include a PHASE switch that allows you to invert the polarity of the signal being passed through the amplifier. Setting this switch to OUT has the same effect as reversing the positive and negative speaker leads.



Bass Boost and Frequency Control

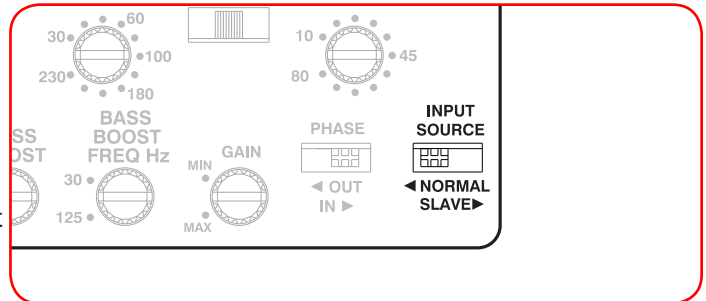
These amplifiers have an adjustable Bass Boost acts like a single-band para-graphic equalizer. Use the BASS BOOST control carefully. Increasing low-frequency output puts tremendous demands on the speaker and amplifier.

The BASS BOOST control determines how much boost is applied to the signal and is adjustable from 0 to +12dB. The BASS BOOST FREQ control determines around what frequency the boost is applied.



Input Source

All three X2 Series Monoblock amplifiers include an input source selector switch. This switch makes it easy to daisy-chain multiple amplifiers together. In NORMAL mode, these amplifiers will source the audio signal from the two INPUT RCA jacks on the front panel. In SLAVE mode, these amps source the audio signal from the SLAVE IN RCA jack on the front panel. This jack should be connected to the SLAVE OUT jack of an identical Master amplifier using an RCA interconnect cable.

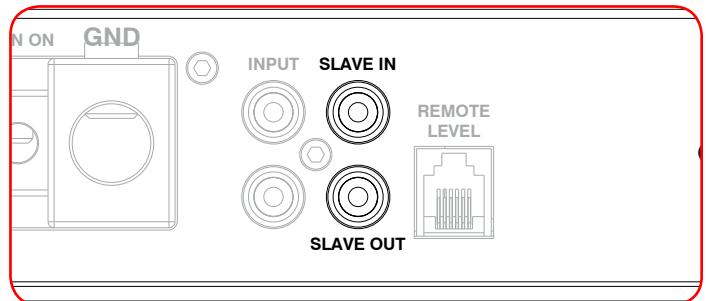


Using the SLAVE IN connection will bypass all but the PHASE Control switch on the Slave amplifier and use only those on the Master amp.

Slave Connections

As outlined above under the INPUT SOURCE description, All three X2 Series Monoblock amplifiers include an audio signal input and output connection that can be used to daisy-chain multiple identical X2 Series Monoblock amplifiers together.

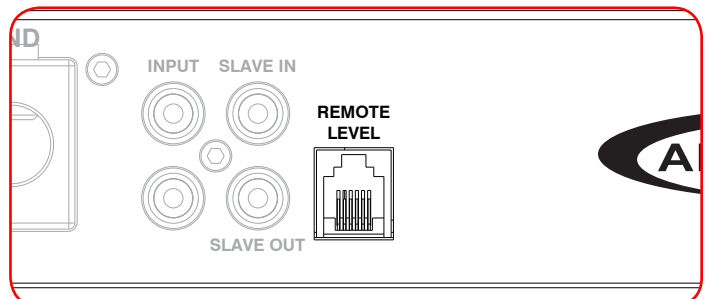
On the main amplifier, the RCA Interconnection wires should be connected to the RCA INPUT and the SLAVE OUT Jacks. If only one Slave amp will be used, connect the SLAVE OUT from the master amp to the SLAVE IN on the second amp. If additional amplifiers are required, repeat the SLAVE OUT to SLAVE IN connection from the previous amplifier in the signal chain.



Remote Level Control

The X2 Series Monoblock amplifiers ship with a remote level control that can be installed in near the driver's seat so the owner can adjust the level of a subwoofer.

To set the gains on these amplifiers, either leave the Remote Level Control disconnected or turn it to it's maximum setting (fully clockwise). The Remote Level Control functions as an attenuator so as not to alter the gain structure of the amp and cause distortion, unlike a remote bass boost control.



Load Impedance

All ARC Audio Amplifiers are designed as voltage-based Power Amplifiers. This means, the amount of power produced to the speaker is dependent on the impedance of the connected speaker(s). Reducing the impedance of the speaker(s) will increase the amount of power produced by the amp, within certain design limits.

With respect to the X2 Series Monoblock amplifiers, your installer may connect a subwoofer or combination of subwoofers with a total combined impedance of no less than 1 Ohm.

The X2 1100.1 and X2 2500.1 include two positive and two negative speaker terminals. These terminals are connected together inside the amp. The amp sees the net load connected to both terminals simultaneously.

WARNING: These amplifiers will not operate and could be damaged if used in the wrong configuration. At no time should they be operated below 1 Ohm.

Note: **None** of the X2 Series Monoblock amplifiers are designed to be strapped or bridged together to power a single speaker voice coil. Under no circumstances should the output of any X2 Series Amplifier be connected to anything other than a speaker voice coil or passive crossover network.

Speaker Output Connections

The X2 650.1 and X2 1100.1 are equipped with set of removable plug-style terminals for speaker wire connections up to 12 AWG.

Due to its massive current delivery capabilities, the X2 2500.1 uses a four-position 8 AWG terminal block for speaker wire connections. Speaker wire is secured in place using #2 Phillips set screws. Be conscious of the size of speaker wire you choose when using this amplifier. I can produce more than 50 amps of current from the speaker terminals.

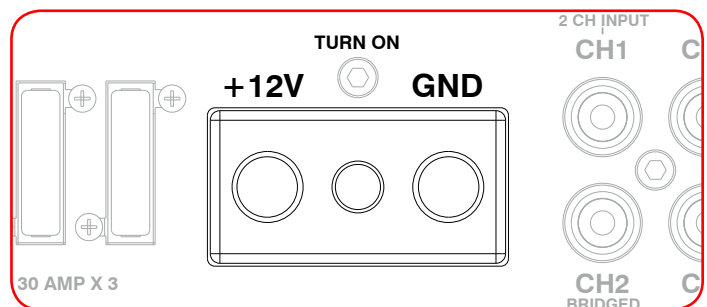
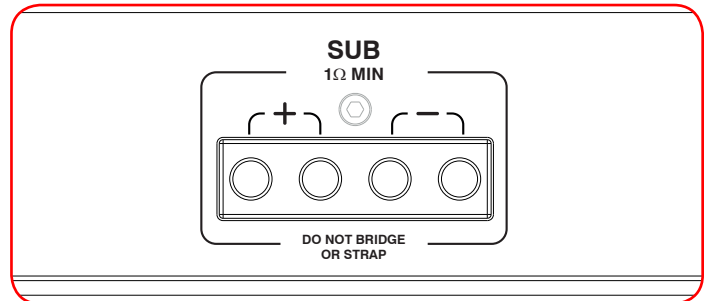
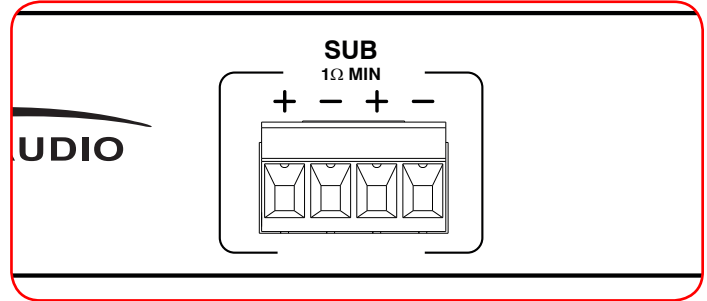
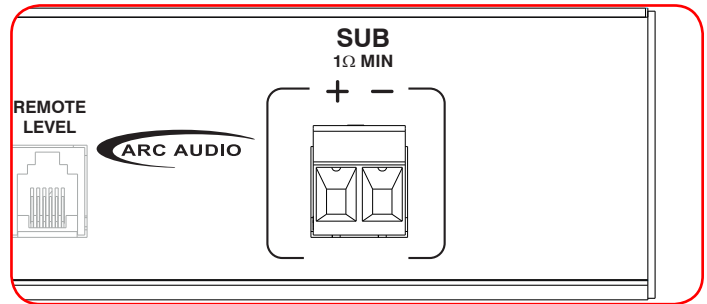
Make all speaker wire connections carefully and neatly. Strip the wire back 5/16", twist the exposed leads together tightly, and insert them into the block terminal while being careful that there is no loose or frayed strands of wire touching adjacent wires or connections. Tighten the set screw on the terminal until the wire is held in place securely. The amplifier will go into protection if the wires ever come in contact

Power, Ground and Turn-On Connections

The X2 650.1 and X2 1100.1 amplifiers feature a terminal block that is designed to accept 4 AWG power and ground connections. The X2 2500.1 is designed for use exclusively with 0/1 AWG power wire. We recommend the use of pure copper power and ground wires in order to achieve the most reliable connections and efficient current delivery.

X2 2500.1 Power Wiring Note: Due to the immense current consumption capabilities of this amplifier, it is recommended that you run both power and ground wires directly to the battery. You may need to upgrade your battery, add additional batteries or upgrade your charging system to supply this amplifier with enough voltage and current for it to produce its full 2500 rated output.

The Turn On input should be connected to the amplifier +12V DC remote turn-on output of your after-market source unit. In most cases this is a blue wire with a white stripe. Note: On some source units, there are power antenna AND remote turn-on wires. If you only hear audio when listening to the AM/FM tuner, your amp may be connected to the wrong wire.

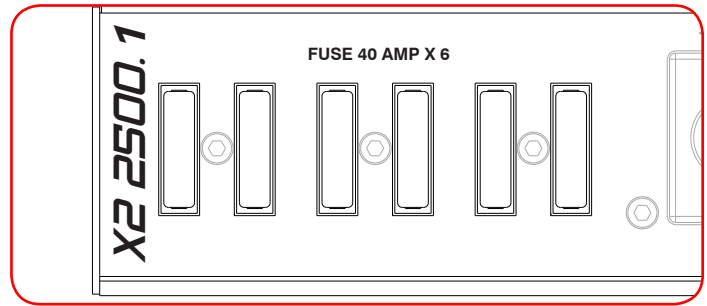


Fuses

The X2 Series Monoblock amplifiers included on-board ATC/ATO fuses on the left side of the end-panel. These fuses exist to protect the internal circuitry of the amplifier from damage and are not a replacement for a proper fuse at the battery in your vehicle. Under no conditions should you increase the value of the fuses used in this location.

If the fuses blow immediately upon insertion, contact your authorized ARC Audio dealer or the Technical Support department at ARC Audio for assistance.

X2 650.1	2 x 30 Amp
X2 1100.1	3 x 30 Amp
X2 2500.1	6 x 30 Amp



Auto Sense Turn-On Detection

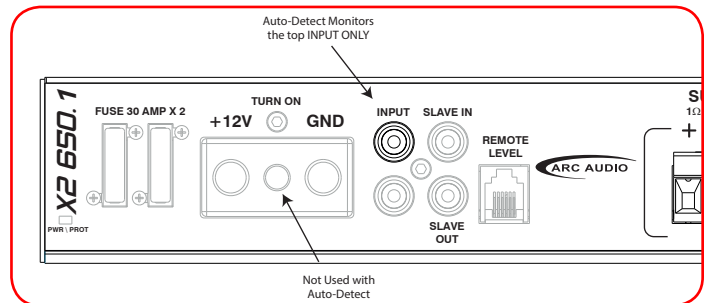
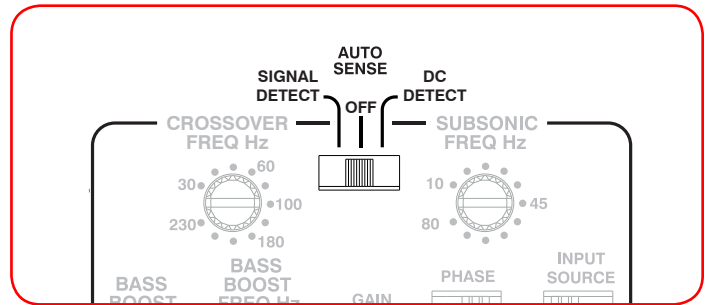
All three X2 Series Monoblock amplifiers feature two Auto-Sense Turn-On modes. In DC Detect mode, these amplifiers monitor the Channel 1 RCA input for the presence of a DC offset voltage (common with Bridge Tied Load (BTL) source units and amplifiers). When this DC voltage is present, the amps will turn themselves on.

When set to Signal Detect, these amplifiers will monitor the Channel 1 RCA input for the presence of an audio signal. When an audio signal is present, the amp will turn itself on.

These amplifiers turn off automatically 10 seconds after the DC Detect or Signal Detect circuit no longer sees an appropriate signal.

When using either Auto-Detect mode, only the Channel 1 input is monitored.

The Turn On input on the power terminal block is NOT used when Auto Detect is turned on.

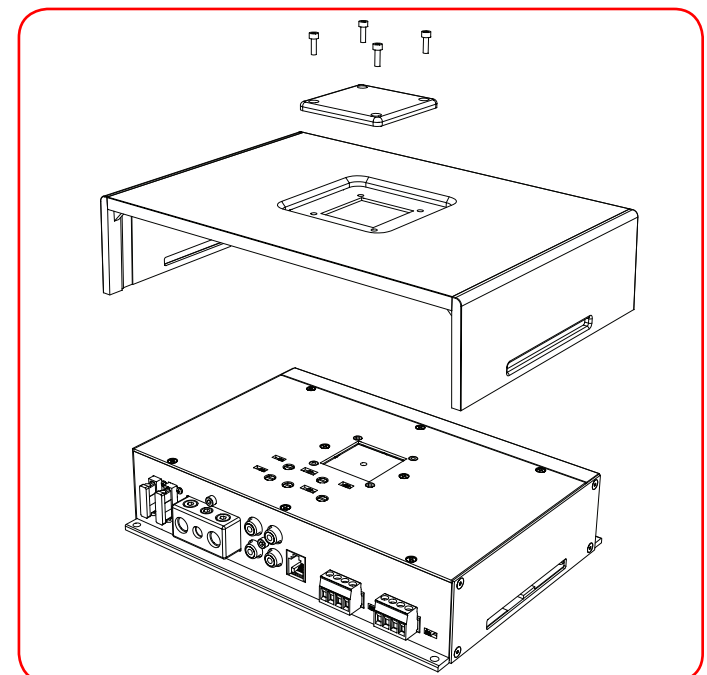


Accessing Controls and Mounting Provisions

All X2 Series Monoblock amplifiers feature a removable shroud that conceals the amplifier controls. The X2 650.1 features X2 Level 1 cosmetics with the X2 1100.1 and X2 2500.1 feature Level 2 X2 Series cosmetics. The Level 2 shroud features an elegant new silver brushed-aluminum extruded aluminum design. An acrylic plastic badge in the center of the amp illuminates in blue when the amp is on, and can flash diagnostic codes as required. The badge may be rotated in 90 degree increments to suit any installation.

To access the controls on the top of the amp, remove the four screws in the badge and set them in a safe place. Remove the badge and set it in a safe place. The amp shroud can now be removed for tuning and installation.

Note: Amplifier shown represents X2-Series amplifier. Dimensions are not to scale.



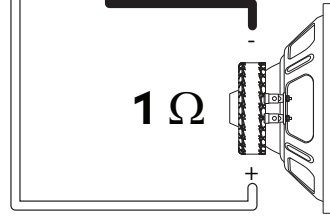
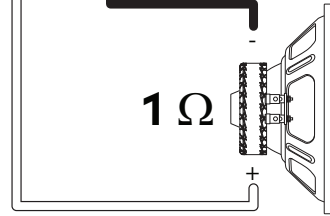
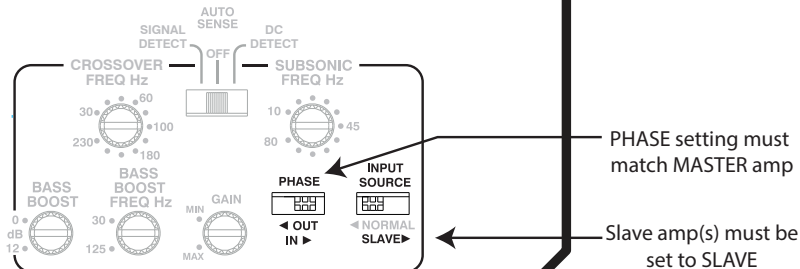
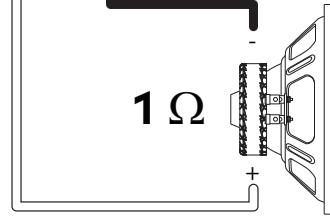
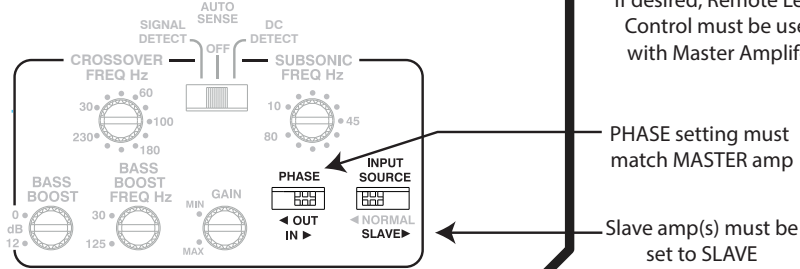
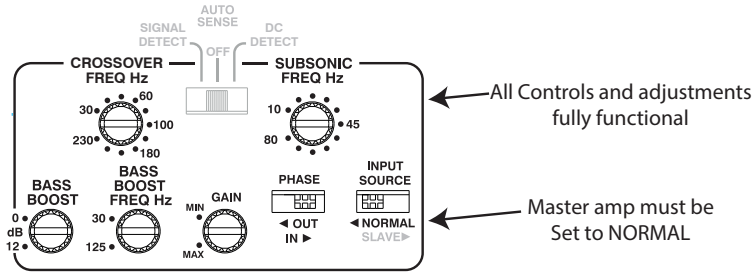
Installation Instructions

Below is a very abbreviated set of installation instructions. This is not meant as a step-by-step procedure, but is intended to give you a general idea of what is involved in installing this amp and the order in which the process should be completed. Every installation will be different and may require reordering of these steps.

- NEVER install the fuse at the battery or connect the negative battery cable until all the connections have been finalized.
- Before you start, disconnect the negative cable from any and all batteries in the vehicle. Tape up or secure the ground lead so it is isolated from the battery.
- Run an appropriate gauge power wire from the battery to the amplifier. Plan this part of the installation carefully. This cable will carry large amounts of current. Should this wire short to the body of the vehicle and not be properly fused, it could easily cause a fire.
- Always use a rubber or plastic grommet when routing power wires through the firewall or any metal surface.
- Connect the power wire to the battery using a fuse that is capable handling the total current requirements of all amplifiers or devices connected to the wire. In cases where multiple amplifiers share a common power wire, ensure each device has proper protection with a fuse. The fuses built-in to the ARC Audio X2-Series amplifiers satisfy this need. Processors, lighting, etc. will require dedicated fuses for safe operation.
- Locate the vehicle protection fuse as close as possible to the battery. If the fuse is further than 18 inches (wire length) from the battery, you should re-evaluate the wire routing and fuse placement. Ideally, the fuse should be within a few inches of the positive battery terminal.
- Find the closest clear metal area to the amp for a the ground connection. Sand, grind or scrape all paint and undercoating from the body and use a nut, bolt and lock washer to secure the wire in place. If your vehicle uses Quiet Steel, composite body panels or may have been assembled using adhesives rather than spot welds, add a parallel ground between the ground location in the vehicle and the negative terminal of the battery to ensure proper power delivery.
- Run the speaker wires to the speakers. It is advised that you leave some extra wire at this point. You can clean it up later.
- If you haven't already done so, mount the amp now.
- Connect the power and ground cables to the amplifier.
- Only after this step should you install the fuse at the battery or batteries. Reconnect the negative battery lead at this point.
- Connect the remote wire from the head unit to the amplifier.
- Turn the amp on for the first time. Make sure it turns on properly and does not go into protection.
- Turn the system off and finish connecting the speaker wires to the amplifiers and speakers. Make sure the polarity (+ and -) is correct.
- Connect the RCA signal wires to the amp.
- Double check the amplifier controls at this time. Make sure everything is set correctly based on your system design.
- Now you're ready to play it for the first time. It is best to leave the gains all the way down at first. Start with the head unit volume low and work your way up.
- Now you can tune the amp. Take your time and make only one adjustment at a time. It may take some time to get the system adjusted for our choice of speakers and subwoofers. Be patient.
- Any time the system is on, large amounts of current may be drawn from the battery. Monitor the battery voltage carefully and charge it thoroughly if it gets low.
- That's it! You're done. Now have fun!

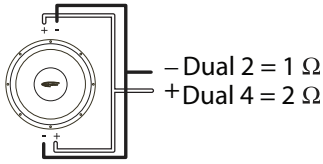
X2 MONOBLOCK

MASTER / SLAVE WIRING

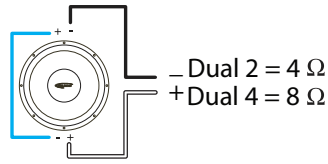


SUBWOOFER WIRING OPTIONS

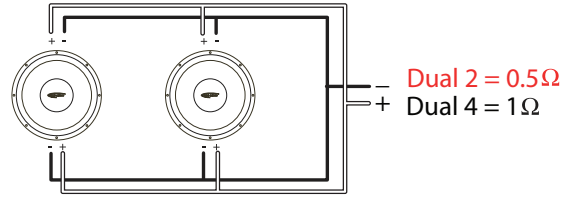
Single Driver - Parallel



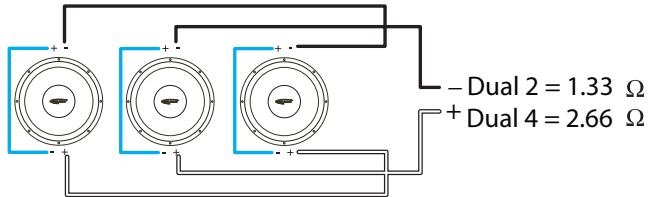
Single Driver - Series



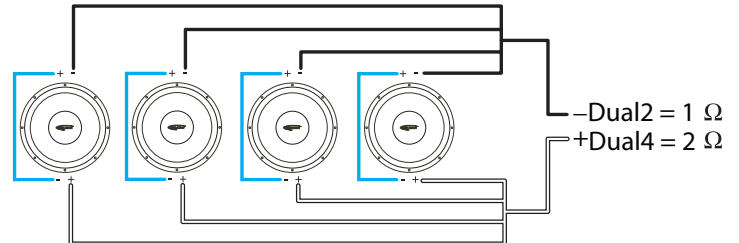
Dual Drivers - Parallel



Three Drivers - Series/Parallel



Four Drivers - Series/Parallel



ARC AUDIO WARRANTY

ARC AUDIO warranties all new X2-Series Amplifiers against defects in material and workmanship for a period of ONE (1) YEAR from the original date of purchase. This warranty is not transferable and applies only to the original retail purchaser of the product, when purchased from an authorized ARC AUDIO retailer in good standing. Upon inspection by ARC AUDIO should services be necessary under this warranty for any reason due to manufacture defects ARC AUDIO will, at its sole discretion, repair or replace the defective product with new or similar conditioned product at no charge.

THIS WARRANTY DOES NOT COVER INSTALLATION OR DAMAGE RESULTING FROM AN ACCIDENT, MISUSE, ABUSE, IMPROPER WIRING, OPERATION OUTSIDE OF THE MANUFACTURER'S RECOMMENDATIONS OR SPECIFICATIONS, OR AGAINST INSTRUCTIONS IN THE OWNERS MANUAL.

ARC Audio products contain many delicate circuits and dangerously high voltages can be present even after power has been removed. These products are designed, tested and tuned for proper functionality and there are no user serviceable parts inside. Please Keep Out!

All warranty returns should be sent to ARC AUDIO freight prepaid and must be accompanied by proof of purchase (a copy of the original sales receipt). Direct returns from consumers or non-authorized retailers will be refused unless specifically authorized by ARC AUDIO with a valid Return Authorization number.

All warranty returns should be packed in original packaging and must be accompanied by a copy of the original sales receipt. Product damaged in shipment will not be covered under this warranty. The customer or retailer may choose to have this damage repaired at the normal "Out of Warranty" repair cost.

In no event will ARC AUDIO be liable for incidental, consequential, or other damages resulting from the use or miss-use of this product. This includes but is not limited to, damage of hearing, property or person, damage based upon inconvenience or in loss of use of the product, and to the extent permitted by law, damages for personal injury. This warranty gives you specific legal rights, and you may have other rights, which vary from state to state. This warranty applies to products sold and used in the United States of America. In all other countries please contact your distributor for warranty guidelines and limitations.

ARC Audio
4719 Green Leaf Circle
Modesto, California
95356 USA
209-543-8706

X2 650.1 Specifications

Rated Continuous (RMS) Power into 4 Ohms at 14.4V	185 Watts x 1
Rated Continuous (RMS) Power into 2 Ohms at 14.4V	350 Watts x 2
Rated Continuous (RMS) Power into 4 Ohms at 14.4V	650 Watts x 1
Frequency Response (Subwoofer Channel)	20 Hz to 230 Hz
Crossover Range - Low-Pass	30 Hz to 230 Hz
Crossover Range - Subsonic	10 Hz to 80 Hz
Bass Boost (Sub Channel)	0 to 12 dB at 30 to 125 Hz
Remote Level Control Included	Yes
Input Sensitivity - RCA Input	200 mV to 3.5V
Fusing	2 x 30 Amp ATC/ATO
Dimensions	9.02"(L) x 6.268"(W) x 2.086"(H)
Start-Stop Vehicle Compatible	Yes (<8 Volts)

X2 1100.1 Specifications

Rated Continuous (RMS) Power into 4 Ohms at 14.4V	350 Watts x 1
Rated Continuous (RMS) Power into 2 Ohms at 14.4V	600 Watts x 2
Rated Continuous (RMS) Power into 4 Ohms at 14.4V	1100 Watts x 1
Frequency Response (Subwoofer Channel)	20 Hz to 230 Hz
Crossover Range - Low-Pass	30 Hz to 230 Hz
Crossover Range - Subsonic	10 Hz to 80 Hz
Bass Boost (Sub Channel)	0 to 12 dB at 30 to 125 Hz
Remote Level Control Included	Yes
Input Sensitivity - RCA Input	200 mV to 3.5V
Fusing	3 x 30 Amp ATC/ATO
Dimensions	13.0"(L) x 6.268"(W) x 2.086"(H)
Start-Stop Vehicle Compatible	Yes (<8 Volts)

X2 2500.1 Specifications

Rated Continuous (RMS) Power into 4 Ohms at 14.4V	900 Watts x 1
Rated Continuous (RMS) Power into 2 Ohms at 14.4V	1600 Watts x 2
Rated Continuous (RMS) Power into 4 Ohms at 14.4V	2500 Watts x 1
Frequency Response (Subwoofer Channel)	20 Hz to 230 Hz
Crossover Range - Low-Pass	30 Hz to 230 Hz
Crossover Range - Subsonic	10 Hz to 80 Hz
Bass Boost (Sub Channel)	0 to 12 dB at 30 to 125 Hz
Remote Level Control Included	Yes
Input Sensitivity - RCA Input	200 mV to 3.5V
Fusing	6 x 30 Amp ATC/ATO
Dimensions	20.92"(L) x 6.268"(W) x 2.086"(H)
Start-Stop Vehicle Compatible	Yes (<8 Volts)