



STUDIO 300X

Owner's Manual

Studio Series
Power Amplifier

A.R.P.A. OF AMERICA CORP.
MADE IN MODESTO, CA U.S.A.

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What is the Studio 300X?

Thank you for purchasing a ZAPCO product! The Studio 300X is a stereo amplifier conservatively rated at 150 watts per channel into a four ohm load and 230 watts per channel into a two ohm load. The Studio 300X incorporates a dual electronic crossover that provides both high pass or low pass outputs.

The amplifier can be configured for low pass, high pass or full range operation. The electronic crossover is separately adjustable for both frequency and level for the internal amplifier and the external crossover line level outputs. The crossover is a Linkwitz-Riley type that eliminates phase error and typical 3dB "hump" at the crossover point. The power supply in the Studio 300X is a new design that dramatically increases power and efficiency. New Gate Drive Boost circuitry greatly improves the MOSFET switching performance and allows for cooler operation.

Studio 300X Key Features

- Dual slope, continuously variable crossover.
- Linkwitz-Riley zero phase crossover with slope selection.
- Line level outputs for driving an external amplifier.
- Low pass, high pass or full range configurations available.
- 100% symmetrical, discrete power amplifier circuitry.
- Dual pro audio balanced differential inputs.
- Gate Boost Drive maximizes power supply efficiency and performance.
- Input sensitivity range switch for optimum channel matching.
- Load stability down to two ohms.
- Sixteen 25-ampere bipolar amplifier output transistors.
- Precision 1% resistors used throughout.
- Gold plated power, RCA and speaker connectors.
- Very high damping factor.
- Low global feedback.
- Quality ZAPCO construction.
- Designed and manufactured in the U.S.A.

Unpacking the Studio 300X

Included in your Studio 300X packing box you will find the warranty registration card. Please fill it out and return it to the factory.

If for any reason your Studio 300X must be returned to the factory, we suggest you retain the original packing box for safe transportation. We also suggest that you record the serial number of your Studio 300X in the space below for your permanent records.

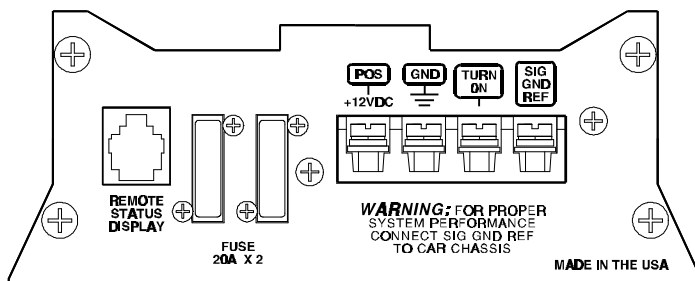
Serial number: _____ Purchase date: _____

Mounting Guidelines

Mounting the Studio 300X is easy. Keep in mind the following guidelines:

- The amplifier may be mounted in any direction, on wood, metal or carpet. The metal case of the amplifier may be grounded or left isolated.
- The amplifier requires adequate ventilation. Position the amplifier with sufficient surrounding area for proper cooling.
- Keep the amplifier out of the engine compartment and other locations that may cause excessive heat or moisture.
- Mount the amplifier in a location that allows easy access to the crossover frequency and gain controls.
- Do not mount the amplifier near the radio antenna.
- Do not mount the amplifier to a subwoofer enclosure or any other place that may have excessive vibration.

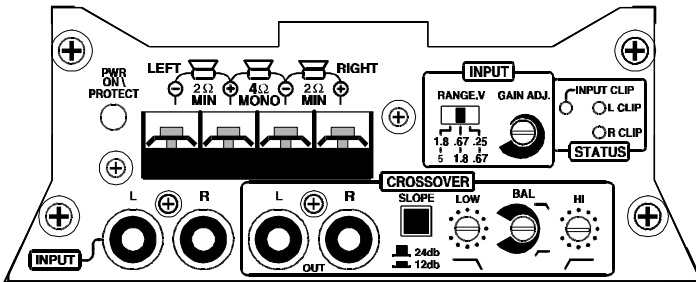
Power Wiring Guidelines



Amplifier Power Endplate

1. Connect the 12V "POS" terminal (FUSED +12VDC) to the battery with 8 gauge (or heavier) wire.
2. Fuse the wire within 18" of the battery with a 50 amp fuse or circuit breaker. Although the amplifier is already fused, a short between the amplifier and the battery could cause a fire. See the section titled "Warnings".
3. Connect the "NEG" terminal to the vehicle chassis with the shortest possible 8 gauge wire. Do not make this connection directly to the battery. Do not use seat or seat belt bolts for grounding. Do not share this connection with other equipment. A "single point" ground for high current connections will degrade the system's performance. Inadequate power supply connections will result in REDUCED POWER OUTPUT.
4. Connect the "SIG GND REF" terminal to the chassis of the head unit. This connection may be made with light gauge wire. See the following page for an explanation of the Signal Reference connection.
5. Connect the "TURN ON" terminal to the radio's "amp turn on" or in some cases "power antenna" lead. This connection requires very little current and may be connected with a light gauge wire such as #22. Applying 12 volts to this terminal turns the amplifier on.

Signal Wiring Guidelines



Control Endplate

Input Connection:

Connect the right and left input signals to the corresponding RCA input jacks on the end of the Studio 300X. Keep these wires close to each other and far away from power and speaker wires.

Input Sensitivity:

The input sensitivity is switch selectable. The "GAIN ADJ" control will vary the input level within the range settings. This method allows a single gain control for both channels and assures maximum channel matching. Initially set the "GAIN ADJ" at maximum and the "RANGE" switch at the 1.8-5 volt setting. Try to obtain the proper input sensitivity with the range switch. Fine tune the input sensitivity with the "GAIN ADJ" control. This procedure optimizes the system headroom.

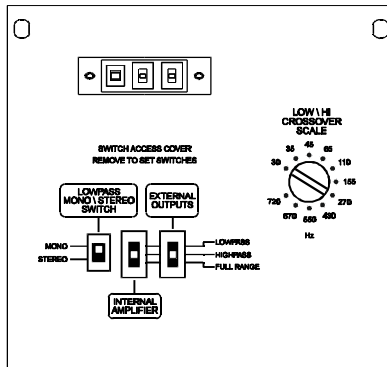
Crossover Output Connections:

Connect the left and right outputs to a second amplifier or crossover. This second amplifier will be configured for high pass operation. High quality audio cables should be used for optimum performance.

Speaker Connections:

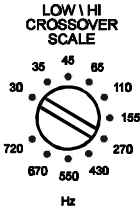
Connect the speaker wiring to the terminals as they are labeled. The minimum impedance or "ohm load" for each individual channel is two ohms. When bridging the outputs into a mono configuration, the minimum impedance is four ohms.

Electronic Crossover



The electronic crossover in the Studio 300X offers much greater flexibility than other subwoofer crossovers currently available. The filters have Linkwitz-Riley slope and damping characteristics that are superior to other designs. The high pass and low pass crossovers can be independently adjusted and the crossover frequencies can be overlapped or underlapped. The output levels are adjusted with the balance control. A 12-24dB per octave switch selects steep (24dB/octave) or ordinary (12dB/octave) low pass slopes. The amplifier and external crossover outputs can be configured for low pass, high pass or full range operation.

Crossover Frequency Controls



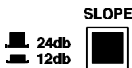
The high and low pass frequency controls vary the crossover frequency between 30 and 720 Hz. The actual crossover frequency can be determined by referencing the frequency scale on the amplifiers bottom plate. Adjustment can be made with a small screwdriver and should not be forced beyond its normal rotation range.

Crossover Balance Control



The crossover balance control decreases either the high pass or low pass outputs. Using a single control assures that the crossover and amplifier will maintain maximum headroom. Turning the control counter-clockwise will decrease the high pass output, while clockwise rotation decreases the low pass output.

Crossover Slope Switch



The slope switch shifts the low pass section of the crossover between 12dB/octave and 24dB/octave operation. The "in" position is for the 12dB/octave mode and the "out" position is for the 24dB/octave mode. The high pass output will always function as 12dB/octave.

Warnings

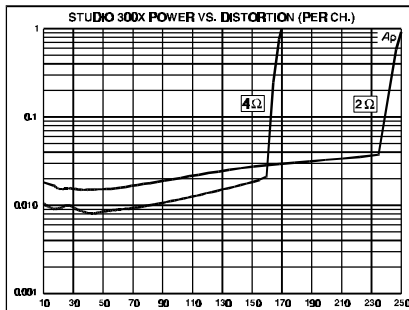
ZAPCO highly recommends that a system protection device (i.e., fuse or circuit breaker) be placed within 18" of the battery. Although ZAPCO products have adequate internal protection, it is possible that power wiring could become pinched between the component and the battery - potentially resulting in a fire. The system protection device should be placed where it can be accessed easily and all wiring should be routed safely and correctly according to the following guidelines:

- Do not run wiring close to hot or spinning objects.
- Always use wire grommets when routing wire through the firewall or any other metal panels.
- Make sure that the potential for pinched wiring is avoided by routing all wires away from moving hinges and seats. This also includes brake, gas and clutch pedals, hood and trunk hinges, etc.

Caution:

Continuous exposure to excessive sound pressure levels may cause permanent hearing loss. ZAPCO strongly advises that you use common sense when setting volume levels.

Power vs. Distortion



Specifications

Output Power	150 watts/ch @ 4 Ω , 20Hz-20kHz 230 watts/ch @ 2 Ω , 20Hz-20kHz
T.H.D. + Noise	<.05%, 20Hz-20kHz @ 150 watts/ch, 4 Ω <.1%, 20Hz-20kHz @ 230 watts/ch, 2 Ω
S/N Ratio	>105dB
Dynamic Headroom	.6dB @ 2 ohm load
Separation	>70dB
Damping Factor	>700 @ 4 ohms, 350 @ 2 ohms
Input Type	Fully balanced differential REF GND
Input Sensitivity	.25 - 5.0 Volts, variable
Maximum Input Level	10 Volts R.M.S.
Input Impedance	20K ohms
Crossover Range	30Hz - 720Hz
Crossover Slope	Low Pass 12dB, 24dB/octave Hi Pass 12dB/octave
Hi Pass T.H.D. + Noise	<.003% @ 10 Volts
Hi Pass Separation	>85dB
Hi Pass S/N Ratio	>120dB
Maximum Output Level	10 Volts R.M.S.
Power Requirements	60 Amperes max. @ 2 ohms
Fuse Rating	Dual 20 Amperes - Automotive blade type
Minimum Load	2 ohms stereo
Idle Current	1.6 Amperes
Dimensions	16"L x 5-7/8"W x 2-1/2"H

Technical Assistance

Should you experience a problem with your Studio 300X, please contact the dealer that sold you this product. If your dealer is unable to solve your problem, you may contact the factory service department directly.

Phone: (209) 577-4268 Monday-Friday 8am-5pm Pacific time

Fax: (209) 577-8548

If you need to return this product for repair, please call the factory for a return authorization number. We will ask you for information which will include your name, return shipping address, daytime phone number, model and serial number, and a detailed description of your problem. A photocopy of your original purchase receipt is necessary to determine warranty status and should also be included. Once we issue you a return authorization number, please write it in a highly visible area on the package. Zapco will not accept any packages that do not have a valid return authorization number clearly marked on the outside of the package.

Send all repairs to:

A.R.P.A. of America Corp.
Attn: Service Department
413 S. Riverside Drive, Suite D
Modesto, CA 95354

Manufacturing

This product is designed and manufactured in the USA. The following operations are ENTIRELY performed in our Modesto, California plant.

1. PC board insertion
The components are inserted into American made printed circuit boards.
2. PC soldering
The printed circuit board assembly is wave soldered.
3. Testing
The PC board is 100% tested to design specs.
4. Extrusion machining
American made aluminum extrusion is cut and machined to precise tolerances.
5. Assembly
The product is assembled.
6. Final Test
Every product is tested with the highest quality audio test equipment to meet or exceed their published specifications.
7. Inspection and final packaging.

*Many companies claim that their products are built in the USA, but only a few of the above steps are actually performed in America. Many of these companies only do the final assembly, with steps 1 - 4 being done outside the USA.



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