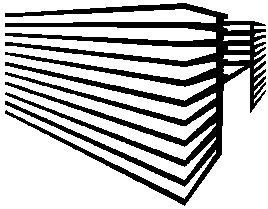


ZAPCO
the Driving FORCE

# STUDIO
# 500

## Owner's Manual

Studio Series
Power Amplifier

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

# Contents

# What is the Studio 500?

Thank you for purchasing a ZAPCO product! The Studio 500 is a stereo amplifier conservatively rated at 250 watts per channel into a four-ohm load and 500 watts per channel into a two-ohm load. The Studio 500 incorporates a balanced - differential input section that eliminates the distortion and noise normally induced into standard RCA cables.

The power supply in the Studio 500 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.

Caution: The Studio 500 is capable of generating extreme sound pressure levels. Please use common sense when setting volume levels.

# Studio 500 Key Features

- 100% symmetrical, discrete power amplifier circuitry.
- 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 500

Included in your Studio 500 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 500 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 500 in the space below for your permanent records.

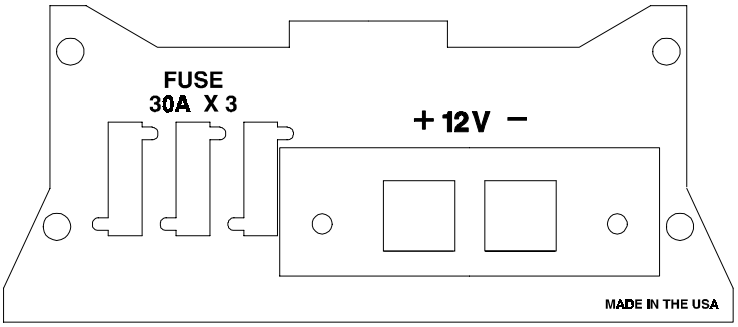
Serial number: _____ Purchase date: _____

# Mounting Guidelines

Mounting the Studio 500 is easy. Keep in mind the following guidelines:

- The amplifier may be mounted in any direction, on wood, or metal. 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 with sufficient space underneath for airflow to the fan.
- 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 for easy access to the 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



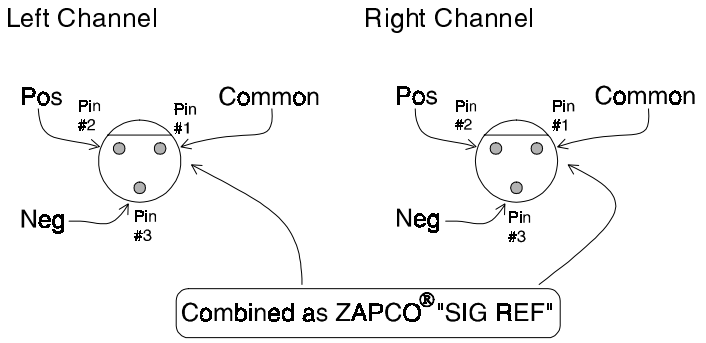

**Amplifier Power Endplate**

1. Connect the 12V “POS” terminal (FUSED +12VDC) to the battery with 6 or 4 gauge (or heavier) wire.
2. Fuse the wire within 18” of the battery with a 100-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 6 or 4 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 “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.

# The “SIG REF” Connection

The Signal Reference connection first appeared in the ZAPCO model Z300 amplifier. This connection was added to fully implement the balanced differential type connection found in professional studio and very high quality home audio gear. Balanced inputs are composed of a (+), a (-) and a common ground connection for each channel. To incorporate this style connection in our audio gear, we combined the left and right common connection and called it the “SIG REF” connection. This allows the amplifier to dramatically reduce common mode distortion and ultrasonic noise produced in the automotive environment. Bench testing of audio product typically does not reveal these types of distortions. This type of audio input allows the amplifier to have the same sonic purity in the automobile as it does on the test bench.

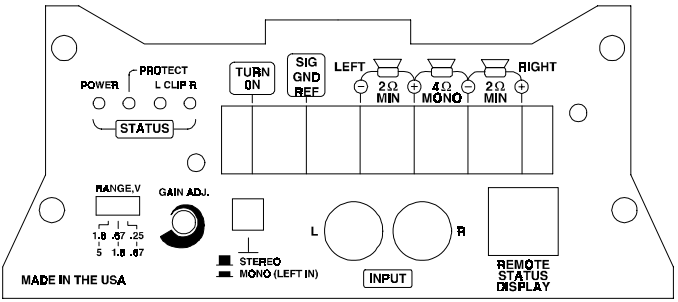
Pro Audio Style Balanced Audio Connections




Failure to connect the SIG REF wire properly will result in

DISTORTION, REDUCED POWER OUTPUT, AND POSSIBLE DAMAGE THAT IS NOT COVERED UNDER WARRANTY!!

# Signal Wiring Guidelines




**Amplifier Control Endplate**

Input Connection:
Connect the right and left input signals to the corresponding RCA input jacks on the end of the Studio 500. 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.

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 into a mono configuration, the minimum impedance is four ohms.

Connect the “SIG GND REF” terminal to the chassis of the head unit. This connection may be made with light gauge wire. See the previous page for an explanation of the Signal Reference connection.

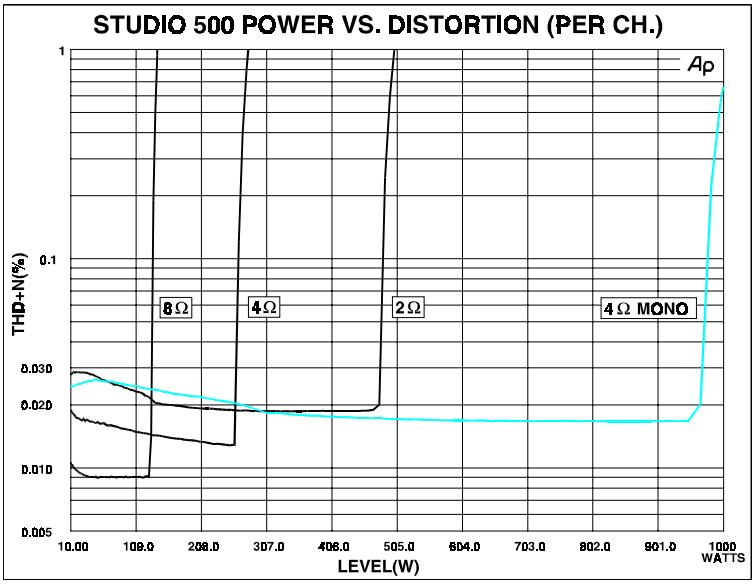
# Warnings

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 | 250 watts/ch @ 4Ω, 20Hz-20kHz<br>500 watts/ch @ 2Ω, 20Hz-20kHz |
| T.H.D. + Noise | <.012%, 20Hz-20kHz @ 250 watts/ch, 4Ω<br><.1% @ 1kHz @ 500 watts/ch, 2Ω |
| S/N Ratio | >114dB |
| Frequency Response | 20Hz - 20kHz +0 , -.5 dB |
| Separation | >63dB |
| Damping Factor | >900 @ 4 ohms, 450 @ 2 ohms |
| Input Type | Fully balanced differential w/ REF GND |
| Input Sensitivity | .25 - 5.0 Volts, variable - 3 ranges |
| Transient Distortion | >.005% |
| Input Impedance | 100K ohms |
| Power Requirements | 125 Amperes max. (peak) @ 2 ohms |
| Fuse Rating | Three 30 Ampere - Automotive blade type |
| Minimum Load | 2 ohms stereo - 4 ohms mono |
| Idle Current | 2.2 Amperes (with fan on) |
| Dimensions | 19.5”L x 5-7/8”W x 2-5/8”H |

# Technical Assistance

Should you experience a problem with your Studio 500, 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

Also, check our web page, www.zapco.com, for tips. You can also e-mail technical help directly from our web page or engineer@zapco.com.

If you need to return this product for repair, please call the factory for a Return Materials Authorization (RMA) number. We will ask you for information that 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 an RMA, please write it in a highly visible area on the package. Zapco will not accept any packages that do not have a valid RMA number clearly marked on the outside of the package.

Once you have a valid RMA number, send all repairs to:

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

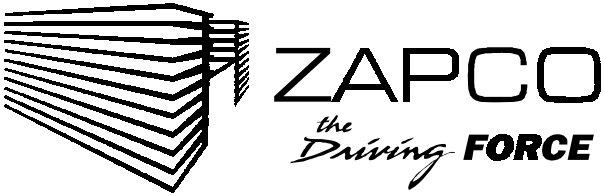
4. Extrusion machining
   American made aluminum extrusion is cut and machined to precise tolerances.

5. Assembly
   The product is assembled with skilled American labor.

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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Studio 500
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10/98