

# **OWNER'S GUIDE SERIES 1500**



**AMPLIFIER TECHNOLOGIES, INC.**

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**CAUTION DO NOT OPEN, RISK OF ELECTRICAL SHOCK!  
DO NOT ATTEMPT SERVICING THIS UNIT YOURSELF.  
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.**

## **INTRODUCTION**

Thank you for purchasing an **ATI** Power Amplifier. Your Power Amplifier is 100% conceived, designed and made in the USA, and has been built to the highest standards of quality and value. Take a few moments to review the rest of the Owners Guide. It contains circuit and design notes, and other pertinent information.

## **UNPACKING**

Immediately upon receiving your amplifier inspect the carton for evidence of mishandling during shipment. Then, carefully unpack the amplifier and inspect it for damage.

Please save the shipping carton and all inner packing materials in the event that the amplifier needs to be shipped for service or moved to a new location. Should you discover that the amplifier has been damaged during shipping, please contact **ATI** immediately.

## **PRECAUTIONS**

The amplifier is a wideband design with substantial power output capability. Certain precautions must be taken to ensure proper operation.

1. Never expose the unit to moisture.
2. Never plug an input cable into the amplifier while the amplifier is turned on.
3. Never apply the "thumb test" (touching the 'hot' lead of the input cable with your finger) to the tip of the input cable or input jack of the amplifier. RF rectification and/or hum will be created and almost surely will damage the loudspeakers. **ATI** will not be responsible for **DAMAGE** to the loudspeakers due to improper use of the equipment.
4. Under no circumstances should the output terminals of the amplifier be short circuited.
5. Avoid restricting the airflow around the amplifier. Good airflow is necessary to help ensure proper operation of the amplifier.
6. Be sure that the loudspeakers connected can handle the the output power of the amplifier at the rated loudspeaker's impedance. The warranty on the amplifier does not cover damage to loudspeakers that have inadequate power handling capabilities.
7. Do not stack other system components or any other materials directly on top of the unit. The heat dissipating system of the amplifier depends on free flowing air around the chassis.

## COOLING

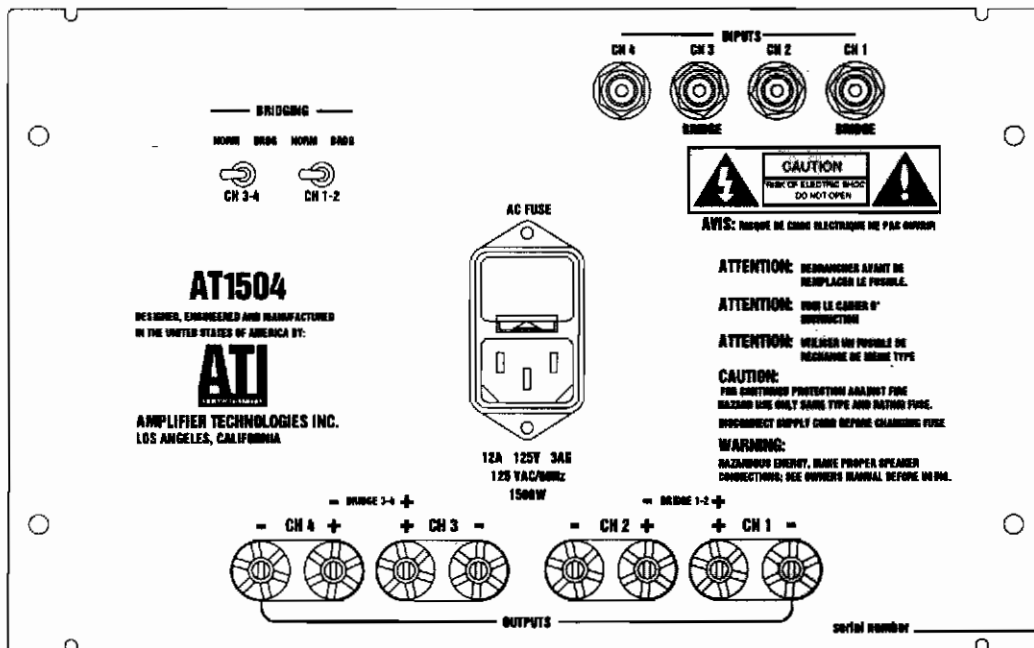
**WARNING:** An amplifier's performance will deteriorate if it overheats. Temperature and ventilation are key factors in proper operation. Not only should you provide enough room around the unit, but also ensure that air can flow freely and escape from the amplifier's surroundings. Consult with your dealer for proper installation.

## INSTALLATION

Your amplifier may be mounted in a standard 19" rack by using the optional rack mount panel. **CAUTION:** the rack mount panel cannot support the weight of your amplifier, be sure to mount the unit on a strong, well supported shelf.

## ELECTRICAL CONNECTIONS

In order to have the wiring concealed, all electrical connections are made in the rear of the amplifier. **CAUTION: ALL CONNECTIONS SHOULD BE MADE WITH THE AC POWERCORD UNPLUGGED AND THE POWER SWITCH IN THE OFF POSITION. UNDER NO CIRCUMSTANCES SHOULD CONNECTIONS TO EITHER THE INPUT OR OUTPUT JACKS BE MADE WITH THE POWER ON.**



## INPUT CONNECTIONS

Well shielded audio cables should be used for the input connections. The input jacks have been gold plated to provide low contact resistance, long life, and minimal susceptibility to corrosion. Be sure to use only high quality coaxial cables with standard RCA type pin jacks to connect the amplifier to a preamplifier or the main output terminals of the control unit. **DO NOT** common ground input ground with output ground (black) terminals.

## **OUTPUT CONNECTIONS**

The output connections are gold plated, touch-proof binding posts. This type of connector provides a solid connection with the speaker wires and eliminates the potential for electric shock. The outputs are marked Channel 1 and Channel 2, etc. The amplifier outputs have a common ground connection to the chassis via the black output terminals.

## **BRIDGING**

Bridging combines two channels into a single channel whose power output is greater than the sum of the two. For example: bridging channels 1 & 2 of 150 watts each will yield one channel @450 Watts into 8Ω. In the same manner, channels 3 & 4 and channels 5 & 6 can be bridged depending on the model of your amplifier.

The following Configuration Chart graphically illustrates the flexibility of your amplifier to meet your custom requirements.

### **CHANNEL CONFIGURATION CHART**

<b>Model</b>	<b>6CH</b>	<b>5CH</b>	<b>4CH</b>	<b>3CH</b>	<b>2CH</b>	<b>1CH</b>
<b>AT1506</b>	6 X 150W	4 X 150W and 1 X 450W	2 X 150W and 2 X 450W	3 X 450W		
<b>AT1504</b>			4 X 150W	2 X 150W and 1 X 450W	2 X 450W	
<b>AT1502</b>					2 X 150W	1 X 450W

To effect the bridging of channels 1 & 2, do the following: Take the "POSITIVE" lead from your loudspeaker and connect it to the RED (+) terminal of CH1, then take the "NEGATIVE" lead and connect it to the RED (+) terminal of CH2. Next, move the bridge switch to the BRIDGE position. Since we are now creating a single channel out of two channels, only one input is necessary. The coaxial cable from your output source should be connected to the CH1 input only. This completes the bridging procedure. Other pairs of channels, i.e. CH3 & CH4 and CH5 & CH6 may be bridged in the same fashion. Use inputs CH3 & CH5 in those instances respectively.

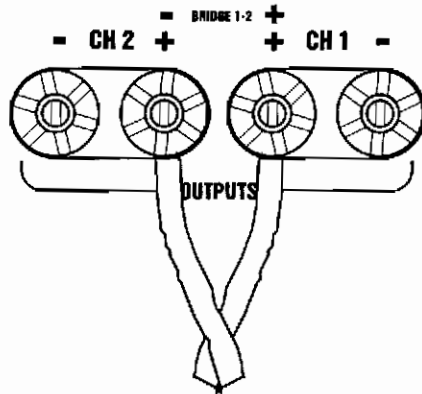
## BRIDGED CONFIGURATION

### BRIDGING

NORM BRDG



CH 1-2



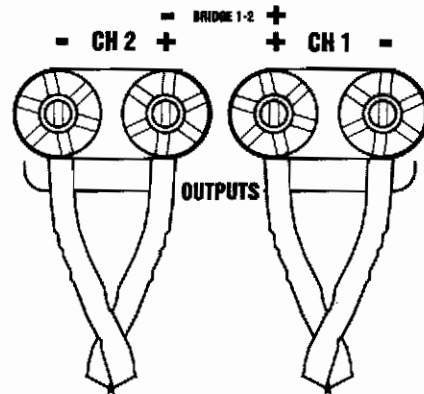
## NORMAL CONFIGURATION

### BRIDGING

NORM BRDG



CH 1-2



## SPEAKER PHASING

To obtain proper stereophonic phasing and correct bass response, it is necessary that both CHANNELS be connected in phase. The correct phasing occurs when both speakers in a stereo pair move in and out in unison (in-phase) on monophonic program material. Speakers connected in-phase ensure proper stereo imaging (placement of instrument and vocalists) while an out-of-phase connection causes indistinct or confused stereo imaging.

The simplest way to effect proper phasing is to closely inspect the cable being used for some form of wire coding. Some forms of cable marking are a ridge or groove on one side of the cable, one lead copper colored while the other is silver colored, or a colored stripe on one edge. The marked side should be attached to the positive terminals of the loudspeaker. By following this procedure for both speakers of a stereo pair, proper phasing is ensured. Should there be some questions, an alternate method may be employed for verification of phasing. Place the two speakers very close together, switch the mode switch on the preamplifier to mono and listen carefully to the program source. Now, turn the system off and reverse one set of speaker leads at the amplifier only. Then replay the same music program and compare the level of bass with the previous passage. If it is now greater, the speaker cable should be left as it is. If it is now less, the speaker cable should be changed back.

## SPEAKER RATINGS

Because the power output capability is very high, it is important to determine the maximum input power rating of the speaker system used with the amplifier. The speaker power rating must equal or exceed the output power rating (at corresponding impedance) of the amplifier to protect the speaker from possible damage. **ATI** cannot be held responsible for damage to a speaker system or individual component whose power rating is lower than that of the amplifier.

## OPERATION

ALWAYS turn on the complete system and wait 30 seconds before turning on the amplifier. A great many pieces of associated equipment generate large voltage transients during turn-on and continue to do so for several seconds afterwards. By turning the amplifier on LAST, these transients are prevented from reaching and damaging the loudspeakers. The reverse procedure applies when turning the system off. ALWAYS turn the amplifier off FIRST, waiting at least 15 seconds for the power supply to discharge or the audible level of the program source to diminish to inaudible levels.

## STATUS INDICATOR LEDs

Your amplifier has been equipped with LEDs on the front panel which will indicate the operating status of each channel. The Normal (green) LED(s) will illuminate when a signal is present. The Peak (red) LED(s) will illuminate when maximum power output is reached or exceeded. The LEDs may blink on and off at various times depending on the status of the signal present.

## CIRCUITRY

The amplifier is totally complementary from input to output. This is achieved by using dual-complementary differential input stages. These input stages are then followed by full complementary push-pull pre-drivers. These in turn are direct coupled (all stages after the A.C. coupled input are D.C. coupled) to two push-pull drivers. All stages up to this point are operated in true Class A. The drivers then drive the full complementary output stage consisting of 6 high current transistors per channel.

The power supply section of the amplifier consists of a highly efficient silicon steel (grain orientated) toroidal transformer core which is wound to provide excellent voltage regulation and current reserve. A further benefit of this transformer design is the low operating temperatures. The filtering section of the power supply for each pair of channels consists of two 18,000uF capacitors. Thus, the model AT1506 has a total of 108,000 uF capacitance.

## AC FUSE

Your amplifier is supplied with a 3AB slow blow main fuse. The ratings are as follows: 10 amps @ 125 volts A.C. for the AT1502, 12 amps @ 125volts A.C. for the AT1504 and 15 amps @ 125 volts A.C. for the AT1506. A spare main fuse is located in the fuseholder for your convenience.

## FUSE FAULT INDICATOR (FFI)

All three models are equipped with the unique Fuse Fault Indicator (FFI) circuitry which provides for simple diagnostics and/or repair if needed. Each channel has two 3AG, 8 amp @ 125 volts A.C. rail fuses and LEDs which will light if a fuse becomes inoperable. **ALWAYS REPLACE A BLOWN FUSE WITH THE SAME TYPE, USING A HIGHER RATED FUSE WILL VOID THE WARRANTY AND MAY DAMAGE THE AMPLIFIER.**

## **SPECIFICATIONS**

<b>MODEL</b>	<b>AT1502</b>	<b>AT1504</b>	<b>AT1506</b>
<b>CHANNELS</b>	<b>2</b>	<b>4</b>	<b>6</b>
<b>POWER RATINGS PER CHANNEL FTC REQUIREMENTS (ALL CHANNELS OPERATING SIMULTANEOUSLY)</b>	<b>150W @ 8 ohms, 225W @ 4 ohms, 450W BRIDGED @ 8 ohms</b>		
<b>POWER BANDWIDTH -3dB</b>	<b>3Hz to 50KHz</b>		
<b>FREQUENCY RESPONSE @ 1W 8 ohms 20Hz to 20KHz</b>	<b>+0dB, -0.25dB</b>		
<b>TOTAL HARMONIC DISTORTION</b>	<b>≤0.05%</b>	<b>≤0.05%</b>	<b>≤0.05%</b>
<b>IHF I.M. DISTORTION</b>	<b>≤0.01%</b>	<b>≤0.01%</b>	<b>≤0.01%</b>
<b>SMPTE I.M. DISTORTION</b>	<b>≤0.03%</b>	<b>≤0.03%</b>	<b>≤0.03%</b>
<b>DYNAMIC HEADROOM</b>	<b>≥2dB</b>	<b>≥2dB</b>	<b>≥2dB</b>
<b>SIGNAL TO NOISE RATIO "A" WEIGHTED</b>	<b>≥100dB</b>	<b>≥100dB</b>	<b>≥100dB</b>
<b>GAIN</b>	<b>28dB</b>	<b>28dB</b>	<b>28dB</b>
<b>DAMPING FACTOR</b>	<b>≥1000</b>	<b>≥1000</b>	<b>≥1000</b>
<b>INPUT IMPEDANCE</b>	<b>28,000 ohms</b>		
<b>RISE TIME</b>	<b>2.2 MICROSECONDS</b>		
<b>DIMENSIONS</b>	<b>17"w x 7"h x 9"d</b>	<b>17"w x 7"h x 13"d</b>	<b>17"w x 7"h x 18"d</b>
<b>WEIGHT</b>	<b>40 lbs</b>	<b>64 lbs</b>	<b>88 lbs</b>

ALL SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE



## **GENERAL MAINTENANCE AND SERVICE**

Great care has been taken to ensure that the amplifier is as flawless in appearance as it is in performance. The front panel is finished with a high-grade anodizing process for durability as well as beauty. It is best cleaned with a soft cloth dampened with a mild solution of liquid detergent and water. **UNDER NO CIRCUMSTANCES** should a lye solution, powdered cleanser, or abrasive cleaner be used on the unit.

## **DETACHABLE MODULAR COMPONENT (DMC)**

Your amplifier employs the unique Detachable Modular Component (DMC) design which provides unit-to-unit quality consistency as well as efficient serviceability. In the unlikely event of a channel failure, the module may be removed for servicing thereby eliminating the need to return the whole unit.

**CAUTION: In no case should you remove a module by yourself. Consult with your dealer or ATI for proper diagnosis of the problem.**

In the event that the unit must be returned to the factory, a Return Authorization Number (R.A.#) must be requested from **ATI** prior to shipping the unit to **ATI**. Under no circumstances should the unit be shipped to **ATI** without prior authorization.

Please contact:

**AMPLIFIER TECHNOLOGIES, INC.**  
1749 Chapin Rd.  
Montebello, CA 90640  
Phone: 1-800-410-0018  
FAX: 1-213-278-0083

It is important that you include a note describing problems you experienced with the unit so that the repair technicians may provide better service. The unit must be **PREPAID** to **ATI** and we will return it to you on a **PREPAID** basis.

## **WARRANTY**

### **LIMITED SEVEN-YEAR WARRANTY**

This **ATI** product is warranted against defects in materials and workmanship for seven years from date of purchase by the original owner. The date of purchase shall be established by the original owner presenting to the **ATI** Customer Service Facility the original owner's purchase receipt or sales slip showing from whom the product was purchased, the date of purchase and the purchase price of the unit. In the event that proof of purchase cannot be established as stated in the preceding sentence, the warranty period shall commence on the date of manufacture, provided the serial number on the unit has not been altered in any manner. During the warranty period, **ATI** will repair, or at its option, replace at no charge, components that prove to be defective provided the product is returned in accordance with the shipping instructions which are contained in the unit. The unit is to be sent **PREPAID** via UPS to **ATI** in the event that it requires Factory Servicing. **ATI** will return it **FREIGHT PREPAID** to you upon completion of the service.

This warranty does not apply if the product has been damaged by accident or misuse or as a result of service modification by other than the **ATI** Factory Service Facility.

**ATI** shall not be held liable for consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

THERE ARE NO WARRANTIES GIVEN BY **ATI** WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. ALL IMPLIED WARRANTIES OF FITNESS FOR PURPOSE SOLD, MERCHANTABILITY, DESCRIPTION, QUALITY PRODUCTIVENESS OR ANY OTHER MATTERS ARE LIMITED TO THE SEVEN YEAR TERM OF THE EXPRESS WARRANTY HEREIN STATED. Some states do not allow limitations on how long an implied warranty may last, so the above limitation may not apply to you.

### **OBLIGATION TO MAKE CHANGES**

Products are sold on the basis of specifications applicable at the time of sale. **ATI** shall have no obligation to modify or to update products once sold.

This warranty gives you specific rights and you may also have other rights which vary from state to state. This warranty is applicable only in the United States.